



August 6, 2015

Mr. Heath Smith
EPA On-Scene Coordinator
U.S. Environmental Protection Agency, Region 7
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Lenexa, Kansas 66219


**Subject: Removal Action Report, Revision No. 4
Ellisville Site (RV007), Wildwood, Missouri
U.S. EPA Region 7 START 4, Contract No. EP-S7-13-06, Task Order No. 0048
Task Monitor: Heath Smith, EPA On-Scene Coordinator**

Dear Mr. Smith:

Tetra Tech, Inc. is submitting the attached revised Removal Action Report regarding the Ellisville site (RV007) in Wildwood, Missouri. If you have any questions or comments, please contact the project manager at (913) 908-4649.

Sincerely,


for Rick Claytor, CHMM
START Project Manager


Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Debra Dorsey, START Project Officer (cover letter only)

**REMOVAL ACTION REPORT
REVISION NO. 4**

**REGARDING THE
ELLISVILLE SITE (RV007)
WILDWOOD, MISSOURI**

**Superfund Technical Assessment and Response Team (START)
Contract No. EP-S7-13-06, Task Order 0048**

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
11201 Renner Boulevard
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August 6, 2015

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1.0 INTRODUCTION

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to assist with a removal action (RA) at the Ellisville site (RV007) in Wildwood, Missouri. Specific elements of this task included (1) collection of post-excavation soil samples to confirm that site-specific removal action levels (RAL) had been met, (2) sampling of excavated soils for disposal profiling analyses, (3) real-time air monitoring during soil excavation, and (4) soil sampling adjacent to excavation areas to better define the extent of contamination. START also assisted with analytical services procurement, sample management, documentation of removal activities, and preparation of detailed maps and diagrams depicting excavated and sampled areas. The START project managers (PM) were Dave Kinroth and Rick Claytor, and the EPA Region 7 task monitor was On-scene Coordinator (OSC) Heath Smith.

2.0 SITE LOCATION

The proposed Strecker Forest development includes three parcels of land encompassing 18.3 acres north of Strecker Road in Wildwood, Saint Louis County, Missouri (see Appendix A, Figure 1). The three parcels include the former Dozier property at 165 Strecker Road (approximately 5 acres), the former Primm property at 173 Strecker Road (approximately 10 acres), and the former Schoessel property at 177 Strecker Road (approximately 3 acres). These three properties were purchased by Claymont Development, LLC with intent to develop the area as a residential subdivision (Strecker Forest). Geographic coordinates at the area are 38.597578 degrees north latitude and 90.605617 degrees west longitude (see Appendix A, Figure 1). The proposed Strecker Forest subdivision is adjacent to (south and west of) the Bliss-Ellisville subsite of the Ellisville site.

3.0 SITE DESCRIPTION

The proposed subdivision area is mostly undeveloped, except for remnants of foundations remaining from previously demolished structures (a garage and two abandoned homes) on the former Dozier and Primm properties. The northern two-thirds of the area is covered mostly by hardwood forest. The property is surrounded by suburban residential areas, except to the north and east, where a 12-acre tract hosts a residence, horse arena, and stables. A portion of the Strecker Forest property includes some of the Bliss-Ellisville subsite. Previous investigations had identified elevated dioxin concentrations in the northeast portion of the proposed Strecker Forest residential development area, which overlaps the western and southern boundaries of the Bliss-Ellisville subsite.

The terrain at the property slopes downward to the north from Strecker Road. Relatively steep slopes are present that vary in elevation from approximately 720 feet above mean sea level (msl) at Strecker Road to approximately 635 feet above msl along a tributary of Caulks Creek at the northeast perimeter of the site. The intermittent Caulks Creek tributary flows to the north along a ravine in the central portion of the property, and intersects another intermittent tributary crossing the northeast corner of the property. All surface water and drainage pathways on the site flow in a northerly direction toward this area (EPA 2013).

4.0 SITE HISTORY/PREVIOUS INVESTIGATIONS

The following is a brief summary of the Bliss-Ellisville subsite immediately north and east of the proposed Strecker Forest subdivision:

The Bliss-Ellisville subsite borders the proposed Strecker Forest development to the north and east, and includes a small portion of a proposed preservation area at the northeast corner of the Strecker Forest property. Investigative activities beginning on September 16, 1980, identified two waste disposal areas northwest of a horse arena on the property. On June 2, 1981, trenching operations guided by eyewitness accounts identified buried drums at the Bliss-Ellisville subsite. Several followup geophysical surveys starting in June 1982 and continuing through August 1990 identified buried waste at a number of locations at the Bliss-Ellisville subsite and contiguous properties. In August 1985, the Missouri Department of Natural Resources (MDNR) placed a liner in the stream bed of the Caulks Creek tributary to stabilize the stream banks, and constructed a berm to divert overland flow from the eroding stream. EPA implemented a removal action (RA) in 1996, involving excavation and management of soil impacted by dioxin and non-dioxin wastes, along with bulk wastes in buried drums and other materials. During the RA, dioxin-contaminated materials were transported to the Times Beach site for thermal treatment (incineration). All non-dioxin hazardous wastes were managed off site at commercial Resource Conservation and Recovery Act (RCRA) permitted hazardous waste facilities. Non-hazardous materials were disposed of at a sanitary landfill. In all, 24,700 tons of dioxin-contaminated soil, 581 tons of soil contaminated with hazardous substances other than dioxin, and 480 buried drums and other containers of wastes were removed from the site. Soil samples were collected to confirm that cleanup goals had been achieved. Once cleanup activities had been completed, excavated areas were backfilled, re-graded, and seeded. The removal activities included a 0.15-acre area at the extreme northeast corner of the Strecker Forest property (referred to as the "NPL Area" of Strecker Forest during past investigations). MDNR continues to monitor groundwater and soil vapor conditions at the Bliss subsite (Tetra Tech EM Inc. 2012).

Because of its proximity to the Bliss-Ellisville subsite, the proposed Strecker Forest residential development property came under scrutiny related to environmental health concerns. From September 2011 to spring 2012, EPA and START conducted soil sampling over the entire 18.3-acre property to support an Expanded Site Review (ESR) to characterize potential impacts on human health and the environment (Tetra Tech EM Inc. 2012).

The scope of the ESR included investigation of these previously sampled areas of the development property, as well as several new areas. These included the southern portion of the Strecker Forest property where 23 home sites have been proposed for development, and an undeveloped area designated as the preservation area in the northern portion of the property. Sampling activities during the ESR occurred between September 2011 and January 2012. Initially, 39 decision units (DU) were established at the proposed Strecker Forest development site to characterize surface soils for a removal site evaluation (RSE) by application of an incremental composite sampling (ICS) approach. Follow-up sampling was conducted in July 2013, when six DUs were added (total of 45 DUs) (see Appendix A, Figure 2). Some

of the DUs were divided into smaller sampling units (SU); physical features within the SUs sometimes dictated further delineation of the SU areas for sampling purposes. These ICS activities are described in the *Removal Site Evaluation Report, Bliss-Ellisville Site – Strecker Forest Subsite, Wildwood, Missouri* (Tetra Tech 2014). The soil samples collected during the RSE were submitted to Cape Fear Analytical, LLC (CFA) in Wilmington, North Carolina, for analysis for dioxin toxic equivalence (TEQ) compounds via Method 1613B.

Elevated dioxin TEQ levels were limited to three areas covering a total of approximately 1.0 acre in the northeast portion of the property proposed for residential development. By implementing the ICS sampling methodology, it was determined that in seven of the SUs, dioxin TEQ concentrations exceeded the Preliminary Remediation Goal (PRG) of 820 parts per trillion (ppt) for non-residential, undeveloped areas of the site (see left side of Figure 2 in Appendix A). TEQ concentrations as high as 5,822 ppt were detected in surface soils. Five subsurface samples collected within and near these areas contained dioxin TEQ concentrations that exceeded the PRG of 2,460 ppt for depths greater than 1 foot. Dioxin TEQ concentrations as high as 26,684 ppt were detected in subsurface soils. EPA Region 7 determined that site conditions could pose a threat to public health and welfare, based on levels of dioxin-related compounds (specifically 2,3,7,8-tetrachlorodibenzo-p-dioxin [TCDD]) above the site-specific PRGs. The site qualified for RA consideration, based on National Contingency Plan (NCP) criteria in 40 *Code of Federal Regulations* (CFR) 300.415(b).

5.0 REMOVAL ACTIVITIES

Excavation to at least 3 feet below ground surface (bgs) at localized areas of the site was determined necessary to achieve cleanup goals. The map on the right side of Figure 2 in Appendix A identifies the areas addressed during removal activities (Excavation Areas [EA] 1, 2, and 3). Photos from the RA are in Appendix B. Field sheets for all samples collected during this RA are in Appendix C (provided on compact disk [CD]).

5.1 PRELIMINARY REMOVAL ACTIVITIES

On February 13, 2014, Mr. Kinroth collected samples of rock (SFRA-1 and SFRA-2) that would be used to improve an on-site roadway for the RA. These samples were screened for metals by use of a portable x-ray fluorescence (XRF) spectrometer, and for volatile organic compounds (VOC) by use of a MultiRAE Plus with built-in photoionization detector (PID). No elevated concentrations of metals were detected, and no VOC readings above background were observed. Mr. Kinroth also collected a composite sample (SFRA-3) of proposed topsoil to be used as backfill for areas excavated during the RA. The sample was submitted to GEL Laboratories in Charleston, South Carolina, for analysis for semivolatile organic compounds (SVOC), VOCs, polychlorinated biphenyls (PCB), and metals regulated by the Resource Conservation and Recovery Act (RCRA) (including mercury). Sample SFRA-3 did not contain concentrations of contaminants above any level of concern (see Appendix D [on CD]). A portion of this sample was also submitted to CFA for analysis for dioxins/furans (TEQ compounds) via Method 1613B. This sample contained a dioxin TEQ concentration of 1.34 ppt. The proposed topsoil source was subsequently deemed acceptable for use as backfill material for restoration of the site following excavation activities. In addition, Mr. Kinroth collected a nine-aliquot soil sample from 0-1 foot bgs at EA 1 (cells H and I) for disposal profiling analyses. This sample (SFRA-4) was provided to Clean Harbors, the firm that would be handling disposal of the excavated soil. Based on the sample results obtained by Clean Harbors (see Appendix D [on CD]), the proposed receiving facility—Lone Mountain Landfill in Waynoka, Oklahoma—agreed to accept the waste from the site.

On March 24, 2014, EPA OSC Smith, START PM Kinroth, and personnel from the EPA Region 7 Emergency and Rapid Response Services (ERRS) contractor, Environmental Restoration, LLC (ER), were on site to initiate the RA. Preliminary activities at that time included tree and brush removal, haul road preparation, establishment of staging areas for an office trailer and 25-cubic-yard roll-off boxes that would be used for off-site transportation of excavated soil, and background air monitoring (see Appendix B).

5.2 SOIL EXCAVATION

For this RA, removal action levels (RAL) for dioxin (TEQ) were as follows: 820 ppt in soil from the surface to 12 inches bgs, and 2,460 ppt in soil at depths greater than 12 inches bgs. Throughout the removal process, excavation activities depended on weather, pending sample results, and availability of empty roll-off boxes. Dioxin-contaminated waste generated at this site was treated as F027 (dioxin-bearing) waste. The Universal Treatment Standard (UTS) for F027 waste is 1 part per billion (ppb) for dioxin (40 CFR § 268.48). The alternative Land Disposal Restrictions (LDR) treatment standard (40 CFR § 268.49) states that treatment to achieve a constituent concentration less than 10 times the UTS is not required. Waste generated during the removal that contained up to 10 ppb of 2,3,7,8-TCDD was transported to the RCRA-permitted hazardous waste facility (Lone Mountain Landfill) in Waynoka, Oklahoma, for proper management. Dioxin-contaminated materials with average concentrations greater than 10 ppb were managed by Recupere Sol, Inc., in Saint-Ambroise, Quebec, Canada, a facility capable of meeting the UTS for F027 waste via incineration/thermal treatment prior to disposal.

After excavation of the cells to the depth that had been indicated during RSE activities, post-excavation samples were collected. A nine-aliquot surface soil sample was collected from the floor of the excavated cells. Additionally, a nine-aliquot soil sample was collected from each of the completed side wall faces. Equal portions of each of the side wall samples were then homogenized into one ICS sample and submitted with the floor sample to CFA for dioxin TEQ analysis. Laboratory data were typically provided on a 72-hour turnaround basis. Additional excavation was conducted when the sample results exceeded RALs. If a combined side wall sample for an excavation area exceeded the appropriate RAL, archived samples from each of the individual walls (following ICS protocol) were submitted for analysis to determine where additional excavation would be required.

5.2.1 Excavation Area 3

On April 7, 2014, after the roadway to the removal area had been established, excavation activities were initiated at the south portion of EA 3 in cells H and I (see Appendix A, Figure 2). A Komatsu 200 excavator was used by ERRS to remove 1 foot of soil from those cells; the excavated soil was placed into poly-lined, 25-cubic-yard, roll-off boxes. Post-excavation soil samples for dioxin TEQ analysis were collected by START from the floor and side walls of the (combined) excavated cells. Laboratory data confirmed that the RALs for those cells had been met. A representative sample of excavated soil was also

collected for possible laboratory analysis for disposal profiling parameters, if determined necessary by the OSC.

The excavation process continued to the north, as cells F and G were excavated and sampled separately. Post-excavation sampling in cells F and G confirmed that the RALs for those cells had been achieved. The depth of excavation correlated with assessment projections until odorous stained soil containing trash, debris, and metal drum fragments was exposed near the boundary between cells D and E. Excavation was halted, and a soil sample (SFRA-25) was collected to identify potential contaminants other than dioxins. The sample was submitted to Teklab in Collinsville, Illinois, for analysis for Code R parameters and PCBs, and for Toxicity Characteristic Leaching Procedure (TCLP) analyses for metals, pesticides, herbicides, SVOCs, and VOCs. The laboratory data, received on April 28, 2014, did not indicate elevated contaminant concentrations that would result in additional disposal requirements. These data are in Appendix D (provided on CD).

On April 29, 2014, additional excavation was conducted in EA 3 cells D and E, because previous post-excavation sample results remained above the dioxin TEQ RAL. In the central portion of these cells, additional odorous, stained soil and debris were exposed; excavation was again halted, and it was determined that additional disposal profile sampling would occur. On May 6, 2014, three multi-aliquot subsurface soil samples were collected by START and EPA from the stained portion of cells D and E. The samples were collected at depths of 0 to 1, 1 to 2, and 2 to 3 feet bgs. These samples (SFRA-34, 35, and 36) were submitted to Test America Laboratory in Earth City, Missouri, for disposal profiling analyses (VOCs, SVOCs, PCBs, and TCLP metals). The laboratory data, received on May 15, 2014, did not indicate elevated contaminant concentrations that would result in additional disposal requirements. These data are in Appendix D (provided on CD).

On May 7, 2014, excavation activities were conducted in EA 3 cells A, B, and C to 1 foot bgs. No further excavation occurred in EA 3 until May 19, 2014, when approximately 5 feet of dark (stained) soil was excavated from the eastern portion of cell F, along with stained soil in adjacent cell E. On May 21, 2014, excavation in cells D and E continued until the stained soil had been removed (final depth of 5-6 feet bgs). For post-excavation sampling, cells D and E were combined, and cells A, B, and C were combined. Most of EA 3 had been excavated and backfilled by June 9, 2014. Completion of excavation at EA 3 occurred on June 27, 2014, when the final portion of contaminated soil was excavated from cell A. Achievement of RALs was confirmed by post-excavation sample results. All excavated portions of EA 3 were backfilled after the laboratory data had been received. Table 1 below summarizes sampling activities at EA 3.

TABLE 1
POST-EXCAVATION SAMPLES AT EA 3
ELLISVILLE SITE – WILDWOOD, MISSOURI

Sample No.	Sample Date	Excavated Cell(s)	Sample Description	Excavation Comment	Dioxin TEQ (ppt)
SFRA-5	4/8/14	H/I	Floor, 1-foot depth	Complete	13.09
SFRA-6	4/8/14	H/I	East, south, and west side walls, 1-foot depth	Complete	4.45
SFRA-10	4/10/14	G	Floor, 1- to 2-foot depth	Complete	6.88
SFRA-11	4/10/14	G	West and east side walls, 1- to 2-foot depth	Additional required	4,953.87
SFRA-17	4/16/14	G	West side wall, 1- to 2-foot depth	Complete	<4.5
SFRA-18	4/16/14	G	East side wall, 1- to 2-foot depth	Additional required	4,844.54
SFRA-21	4/21/14	F	Floor, 2-foot depth	Complete	1,507.99
SFRA-22	4/21/14	F	West and east side walls, 1- to 2-foot depth	Complete	296.93
SFRA-23	4/23/14	D/E	Floor, 1-foot depth	Additional required	4,736.93
SFRA-24	4/23/14	D/E	West and east side walls, 1-foot depth	Complete	424.95
SFRA-28	4/30/14	G	East side wall, 4-foot depth	Complete	1,226.96
SFRA-29	4/30/14	D/E	Floor, 2-foot depth, light color	Complete	12.41
SFRA-30	4/30/14	D/E	Floor, 2-foot depth, dark color	Additional required	11,100.02
SFRA-86	6/6/14	D/E	Floor, 3- to 5-foot depth, dark color	Complete	752.89
SFRA-87	6/6/14	D/E	East side wall, 5-foot depth	Complete	230.43
SFRA-88	6/6/14	B/C	East side wall, 6-foot depth	Complete	144.71
SFRA-89	6/6/14	A	North side wall, 7-foot depth	Complete	616.63
SFRA-123	6/26/14	A/B/C	North, east, and west side walls, top 0 to 12 inches	Complete	417.55
SFRA-124	6/27/14	A/B/C	Floor, 6- to 7-foot depth	Complete	69.79
SFRA-130	7/2/14	A	North and east side walls, 6- to 7-foot depth	Complete	528.06

Notes

ppt Parts per trillion
TEQ Toxic equivalence
< Less than

5.2.2 Excavation Area 2

On April 24 and 25, 2014, excavation activities were conducted at EA 2 (see Appendix A, Figure 2), where 6 to 12 inches of soil was excavated by use of a Caterpillar 308 excavator. Confirmation samples were collected from the floor of the area (SFRA-26) and from the side walls (SFRA-27). Laboratory data confirmed that the RALs had been achieved. Table 2 summarizes the sampling activities at EA 2.

TABLE 2

**POST-EXCAVATION SAMPLES AT EA 2
ELLISVILLE SITE – WILDWOOD, MISSOURI**

Sample No.	Date	Sample Description	Excavation Comment	Dioxin TEQ (ppt)
SFRA-26	4/28/14	Floor, 6- to 12-inch depth	Complete	597.30
SFRA-27	4/28/14	All side walls, 6- to 12-inch depth	Complete	184.69

Notes:

ppt Parts per trillion
TEQ Toxic equivalence

5.2.3 Excavation Area 1

Additional roadway construction and tree clearing were required before excavation at EA 1 to allow movement of roll-off boxes to the area. On May 1 and 2, 2014, the contaminated area that had been identified during assessment activities was excavated to 3 feet bgs. Post-excavation sampling results exceeded the RALs, so additional excavation was required. On May 16, 2014, additional soil was excavated from EA 1; the area was expanded in all directions, and an additional foot was excavated from the floor of the area. Laboratory results from post-excavation samples collected from the floor and walls (SFRA-46 through -51) were received on May 23, 2014, and all results still exceeded the RALs.

Excavation activities at EA 1 resumed June 11, 2014. At the southeast corner of EA 1, approximately 8 feet of debris and stained soil was excavated before the RAL was achieved (see Appendix B). A composite sample (SFRA-128) was collected from two roll-off boxes containing soil excavated from the southeast portion of EA 1. This sample was submitted to Test America in Earth City, Missouri, for analysis for PCBs and SVOCs. The boxes were held until the laboratory results confirmed that concentrations of those analytes were not elevated.

In the northwest portion of EA 1, no debris or discoloration was observed, but additional excavation was still required before the RALs were reached. The north wall of EA 1 was excavated to the level of the adjoining creek bed, approximately 4.5 feet below the initial surface level of EA 1. Samples SFRA-157 and -158 were collected from the north floor at the level of the creek. Excavation of EA 1 was completed on July 21, 2014, and final confirmation samples were collected on July 23, 2014. Large gabion rock (3 to 5 inches) was placed on the slope between the creek and EA 1 (after backfilling) to stabilize the bank (see Appendix B). Table 3 summarizes results of post-excavation sampling at EA 1.

TABLE 3

**POST-EXCAVATION SAMPLES AT EA 1
ELLISVILLE SITE – WILDWOOD, MISSOURI**

Sample No.	Date	Sample Description	Excavation Comment	Dioxin TEQ (ppt)
SFRA-31	5/2/14	Floor, 3-foot depth	Additional required	20,387.39
SFRA-32	5/2/14	All side walls, 3-foot depth	Additional required	3,210.59
SFRA-37	5/8/14	West side wall, 0- to 4-foot depth	Additional required	6,705.19
SFRA-38	5/8/14	South side wall, 0- to 4-foot depth	Additional required	2,575.89
SFRA-39	5/8/14	East and north side walls, 0- to 6-foot depth	Additional required	3,219.04
SFRA-46	5/16/14	East half of floor, 4-foot depth	Additional required	30,753.48
SFRA-47	5/16/14	West half of floor, 4-foot depth	Additional required	4,316.88
SFRA-48	5/16/14	West side wall, 0- to 4-foot depth	Additional required	7,336.55
SFRA-49	5/16/14	South side wall, 0- to 4-foot depth	Complete after sample SFRA-159	1,420.36
SFRA-50	5/16/14	East side wall, 0- to 4-foot depth	Additional required	2,677.48
SFRA-51	5/16/14	North side wall, 0- to 4-foot depth	Additional required	4,399.71
SFRA-105	6/20/14	West half of floor, 4- to 6-foot depth	Complete	182.36
SFRA-106	6/20/14	All side walls in the northwest corner, 5- to 6-foot depth	Additional required	13,949.15
SFRA-107	6/20/14	Southwest corner side walls, 4- to 6-foot depth	Complete after samples SFRA-159 and -161	1,040.42
SFRA-113	6/23/14	East half of floor, 5- to 8-foot depth	Complete	181.03
SFRA-114	6/23/14	East side wall, 0- to 8-foot depth	Complete	355.94
SFRA-115	6/24/14	Southeast corner floor, 6- to 8-foot depth	Complete	416.97
SFRA-116	6/24/14	West side wall of the southeast corner, 0- to 6-foot depth	Complete after sample SFRA-125	868.81
SFRA-117	6/24/14	South side wall of the southeast corner, 0- to 6-foot depth	Complete after samples SFRA-134 and -135	1,199.16
SFRA-118	6/24/14	East side wall of the southeast corner, 0- to 8-foot depth	Complete after samples SFRA-134 and -135	1,160.06
SFRA-125	6/30/14	West side wall of the southeast corner, 0- to 12-inch depth	Complete	500.12
SFRA-126	6/30/14	East side wall, 0- to 12-inch depth	Additional required	924.55
SFRA-131	7/2/14	North side wall, 4- to 5-foot depth	Additional required	10,537.08
SFRA-132	7/2/14	Northwest corner side walls, 4-foot depth	Additional required	4,865.26
SFRA-134	7/8/14	Floor of all side walls of the southeast corner, at a depth of 12 inches	Complete	846.71
SFRA-135	7/8/14	Southeast corner side walls, 0- to 12-inch depth	Complete	364.33
SFRA-138	7/10/14	Northwest corner floor, 4-foot depth	Complete	745.36
SFRA-139	7/10/14	South side wall of the northwest corner, 0- to 4-foot depth	Additional required	8,395.30
SFRA-140	7/10/14	West side wall of the northwest corner, 0- to 4-foot depth	Additional required	8,251.49
SFRA-141	7/10/14	North side wall of the northwest corner, 0- to 4-foot depth	Additional required	3,470.36

TABLE 3 (Continued)**POST-EXCAVATION SAMPLES AT EA 1
ELLISVILLE SITE – WILDWOOD, MISSOURI**

Sample No.	Date	Sample Description	Excavation Comment	Dioxin TEQ (ppt)
SFRA-147	7/17/14	North and east side walls of the northwest corner, 0- to 4-foot depth	Complete	339.07
SFRA-157	7/22/14	North floor, east portion (creek level)	Nothing more excavated	7,172.86
SFRA-158	7/22/14	North floor, west portion (creek level)	Nothing more excavated	3,383.55
SFRA-159	7/22/14	South side wall of the northwest corner, 0- to 12-inch depth	Complete	289.59
SFRA-160	7/23/14	West side wall of the northwest corner, 1- to 4-foot depth	Complete	2,371.78
SFRA-161	7/23/14	West side wall of the northwest corner, 0- to 12-inch depth	Complete	347.88

Notes:

ppt Parts per trillion
TEQ Toxic equivalence

Analytical data packages received from CFA were forwarded to Deanna Crumbling, sampling statistician at EPA Headquarters (HQ) in Washington, D.C., for calculation of Kaplan-Meier TEQ values. These TEQ values are listed in tables in Appendix E (provided on CD).

5.3 SAMPLING FOR DISPOSAL COORDINATION

As soil was excavated, it was loaded directly into poly-lined, 25-cubic-yard, roll-off boxes and sampled for laboratory analysis for dioxin. Initially, samples from three roll-off boxes were combined into one sample for analysis. In addition, soil from each roll-off box was held and analyzed individually if the combined dioxin concentration exceeded 10,000 ppt (10 ppb) —the maximum concentration that could be accepted by the Lone Mountain Landfill in Waynoka, Oklahoma. However, because of the time required to receive follow-up data from samples from individual roll-off boxes if needed, combined roll-off box sampling was later discontinued. The filled roll-off boxes were staged on site until all necessary laboratory results for dioxin were received, allowing coordination of disposal arrangements. Excavated dioxin-contaminated material found to contain concentrations greater than the alternative LDR treatment standard (10 ppb) was trucked to the Recupere Sol, Inc., facility in Saint-Ambroise, Quebec, Canada, for thermal treatment prior to disposal. During the project, 101 roll-off boxes were shipped off site for disposal. Seventeen boxes, containing 267.06 tons of dioxin-contaminated soil, were shipped to the Recupere Sol, Inc., facility in Canada for incineration. The remaining 84 boxes, containing 1,277.58 tons of dioxin-contaminated soil, were trucked to the Lone Mountain Landfill in Oklahoma for disposal. Table 4 summarizes results from samples of excavated soils in the roll-off boxes.

TABLE 4

**ROLL-OFF BOX SAMPLES
ELLISVILLE SITE – WILDWOOD, MISSOURI**

Sample No.	Excavation Area	Roll-off Box IDs	Dioxin TEQ (ppt)
SFRA-7	EA 3, cells H/I	4, 5, and 6	1,084.49
SFRA-8	EA 3, cell G	7, 8, and 9	10,333.60
SFRA-9	EA 3, cell G	10, 11, and 12	3,592.32
SFRA-12	EA 3, cell G	13, 14, and 15	1,085.86
SFRA-13	EA 3, cell G	16, 17, and 18	3,092.32
SFRA-14	EA 3, cell G	7	5,681.17
SFRA-15	EA 3, cell G	8	17,455.32
SFRA-16	EA 3, cell G	9	3,720.36
SFRA-19	EA 3, cell G	19, 20, and 21	4,556.90
SFRA-20	EA 3, cell F	22, 23, and 24	5,870.79
SFRA-33	EA 1	39	24,434.89
SFRA-41	EA 1	41	13,355.69
SFRA-42	EA 1	42	6,189.20
SFRA-43	EA 1	44	20,743.61
SFRA-44	EA 1	45	14,092.96
SFRA-45	EA 1	46	10,626.04
SFRA-52	EA 3, cell F (dark)	47	2,413.04
SFRA-53	EA 3, cell F (dark)	48	42,642.51
SFRA-54	EA 3, cell E (dark)	49	19,731.13
SFRA-55	EA 1	38	13,865.29
SFRA-56	EA 3, cell E (dark)	50	15,742.86
SFRA-57	EA 3, cell E (dark)	51	360.06
SFRA-58	EA 3, cell E (dark)	52	26,048.09
SFRA-59	EA 3, cell E (dark)	53	3,907.01
SFRA-60	EA 3, cell E (dark)	54	5,548.15
SFRA-61	EA 3, cells D/E	55	2,504.09
SFRA-62	EA 3, cells D/E	56	1,476.54
SFRA-73	EA 3, cells D/E	57	3,121.50
SFRA-74	EA 3, cells D/E	58	12,056.80
SFRA-75	EA 3, cells D/E	59	4,735.13
SFRA-76	EA 3, cell C	60	949.66
SFRA-77	EA 3, cell C	61	1,040.53
SFRA-78	EA 3, cell C	62	2,469.24
SFRA-79	EA 3, cell C	63	1,518.06
SFRA-80	EA 3, cells A/B	64	757.17
SFRA-81	EA 3, cells A/B	65	247.25
SFRA-82	EA 3, cells A/B	66	702.66
SFRA-83	EA 3, cells A/B	67	914.29
SFRA-84	EA 3, cells A/B	68	445.52
SFRA-85	EA 3, cells A/B	69	1,272.33
SFRA-96	EA 3, cells A/B	70	980.29
SFRA-97	EA 3, cells A/B	71	151.62

TABLE 4 (Continued)

**ROLL-OFF BOX SAMPLES
ELLISVILLE SITE – WILDWOOD, MISSOURI**

Sample No.	Excavation Area	Roll-off Box IDs	Dioxin TEQ (ppt)
SFRA-98	EA 1	72	3,223.35
SFRA-99	EA 1	73	3,963.41
SFRA-100	EA 1	74	13,840.16
SFRA-101	EA 1	75	3,050.08
SFRA-102	EA 1	76	3,952.01
SFRA-103	EA 1	77	3,108.85
SFRA-104	EA 1	78	615.78
SFRA-108	EA 1	79	962.47
SFRA-109	EA 1	80	14,230.69
SFRA-110	EA 1	81	2,811.13
SFRA-111	EA 1	82	1,556.76
SFRA-112	EA 1	83	7,721.91
SFRA-119	EA 1	84	597.46
SFRA-120	EA 1	85	677.38
SFRA-121	EA 1	86	1,577.75
SFRA-122	EA 3, cells A/B	87	257.91
SFRA-127	EA 3, cells A/B	88	164.00
SFRA-128	EA 1	87 and 88	PCBs and SVOCs only
SFRA-129	EA 3, cell A	89	386.18
SFRA-133	EA 1	90	5,750.93
SFRA-136	EA 1	91	320.81
SFRA-137	EA 1	92	272.42
SFRA-142	EA 1	93	4,10273
SFRA-143	EA 1, northwest corner	94	14,965.92
SFRA-144	EA 1, northwest corner	95	3,117.52
SFRA-145	EA 1, northwest corner	96	5,716.19
SFRA-146	EA 1, north wall	97	3,592.18
SFRA-148	EA 1, north wall	98	24,473.49
SFRA-149	EA 1, north wall	99	11,324.35
SFRA-150	EA 1, north wall	100	1,786.36
SFRA-162	EA 1, northwest corner	101	1,121.32

Notes:

PCB Polychlorinated biphenyl
 ppt Parts per trillion
 SVOC Semivolatile organic compound
 TEQ Toxic equivalence

5.4 ADDITIONAL SOIL SAMPLING

Additional soil sampling activities occurred during the RA to confirm that no additional dioxin-contaminated areas would have to be addressed. The area between EA 3 and EA 2 was divided into two subareas: the south half was identified as EA 4, and the north half was designated as EA 5. The east boundary of these areas was the horse arena, and the west boundary was the roadway next to the west side of EA 3 and EA 2 (see Appendix A, Figure 3). Previous surface soil sampling had not identified elevated concentrations of dioxin within these areas.

On May 29, 2014, EPA Geoprobe® direct push technology (DPT) equipment was used by EPA and START to collect subsurface soil samples (SFRA-63 through -72) within EA 4 and EA 5, as well as within EA 2 (see Appendix C [on CD]). Six, three-aliquot samples were collected within EA 4; three samples were collected at 0 to 2 feet bgs, and three were collected at 2 to 4 feet bgs. Each sample represented one-third of the area at the sampled depth. At EA 5, two composite samples were collected within the central third of the area. The sample depths were the same as those at EA 4. Additionally, two composite samples were collected in a ditch along the western edge of EA 2 at 2 to 4 feet bgs. EA 2 had already been excavated to 1 foot bgs and backfilled. No dioxin concentrations exceeding the RAL were identified in any of these samples; therefore, no further excavation occurred. Table 5 includes a summary of these sample results.

On June 6, 2014, the EPA Geoprobe® DPT equipment was used by EPA and START to collect subsurface soil samples to further define the extent and estimated volume of contaminated soil adjacent to the southeast corner of EA 1. At one location southeast of EA 1, three grab samples were collected (SFRA-93, -94, and -95): one at 0 to 2 feet bgs, a second at 2 to 4 feet bgs, and a third at 4 to 6 feet bgs. Results from these samples indicated that at least 6 feet of soil would have to be excavated from EA 1 to achieve the RAL (completed later in June 2014).

A retention pond was constructed to hold rainwater so that excavation could continue after rain events. Previous surface soil sampling of this retention pond area, between EA 2 and EA 6, had not identified elevated dioxin concentrations. Soil was pushed out to form a basin for the retention pond, with the soil creating a 3-foot-high berm. A nine-aliquot surface soil sample was collected from the floor of the pond; the dioxin TEQ result was less than the RAL. When rainwater collected in EA 3, it was pumped into the retention pond, where it infiltrated and evaporated.

EA 6 was identified as the area between the retention pond and EA 1 (see Appendix A, Figure 3). Two three-aliquot soil samples were collected from a ditch running through the middle of this area at 0 to

2 feet bgs (SFRA-90) and at 2 to 4 feet bgs (SFRA-91). Dioxin TEQs in these samples did not exceed RALs. No removal activities were subsequently required at EA 6. These laboratory results are summarized in Table 5, and the complete laboratory data are in Appendix D (provided on CD). The retention pond area was re-graded, leveled, and seeded, as were the other excavated and backfilled areas.

TABLE 5
ADDITIONAL SOIL SAMPLES
ELLISVILLE SITE – WILDWOOD, MISSOURI

Sample No.	Date	Sampled Area	Sample Depth	Comment	Dioxin TEQ (ppt)
SFRA-40	5/15/14	Retention pond floor before use	0 to 2 inches	No excavation required	216.90
SFRA-63	5/29/14	EA 4, cell A	2 to 4 feet	No excavation required	5.41
SFRA-64	5/29/14	EA 4, cell A	2 to 4 feet	No excavation required	8.91
SFRA-65	5/29/14	EA 4, cell C	2 to 4 feet	No excavation required	44.71
SFRA-66	5/29/14	EA 4, cell C	0 to 2 feet	No excavation required	251.19
SFRA-67	5/29/14	EA 4, cell B	2 to 4 feet	No excavation required	<3.2
SFRA-68	5/29/14	EA 4, cell B	0 to 2 feet	No excavation required	148.94
SFRA-69	5/29/14	EA 5, cell B	2 to 4 feet	No excavation required	<2
SFRA-70	5/29/14	EA 5, cell B	0 to 2 feet	No excavation required	96.26
SFRA-71	5/29/14	EA 2, cell D	2 to 4 feet	No excavation required	<5
SFRA-72	5/29/14	EA 2, cell C	2 to 4 feet	No excavation required	874.17
SFRA-90	6/6/14	EA 6, cell B	0 to 2 feet	No excavation required	603.35
SFRA-91	6/6/14	EA 6, cell B	2 to 4 feet	No excavation required	811.14
SFRA-92	6/6/14	East of retention pond	2 to 4 feet	No excavation required	5.43
SFRA-93	6/6/14	EA 1, southeast corner	0 to 2 feet	Excavation required	919.68
SFRA-94	6/6/14	EA 1, southeast corner	2 to 4 feet	Excavation required	2,995.55
SFRA-95	6/6/14	EA 1, southeast corner	4 to 6 feet	Excavation required	16,343.59
SFRA-156	7/22/14	Retention pond floor after use	0 to 2 inches	No excavation required	102.82

Notes:

ppt Parts per trillion
TEQ Toxic equivalence

5.5 AIR MONITORING

During soil excavation activities, real-time air monitoring was performed by START. Two monitoring stations were established—one upwind and one downwind of the excavation area. At each station, an MIE DataRAM 4™ aerosol monitor was used to measure concentrations of airborne particulate matter, and a MultiRAE Plus multi-gas monitor with a built-in PID was used to monitor for VOCs. The

DataRAM 4™ was fitted with a size-selective impactor head to monitor only particulate matter 10 micrometers or less in size (PM-10). Data were logged by each unit and later downloaded and tabulated. No concentrations that would pose health threats to site workers or nearby residents were recorded. The air monitoring data are in Appendix F (provided on CD).

5.6 SITE SURVEY AND CLOSURE OF STAGING AREAS AND ROADWAY

START collected five multi-aliquot surface samples from the roadway and staging areas for dioxin TEQ analysis on July 22, 2014. The samples (SFRA-151 through -155) were collected to confirm that contaminated soil had not been transferred to the road and staging areas during the removal process. The road was divided into three sections for sampling. The northern third—the section of the road adjacent to the excavation areas—was found to contain a dioxin TEQ value of 17.07 ppt (SFRA-151). The samples from the central and southern sections (SFRA-153 and -154) were found to contain dioxin TEQ results less than 1.93 ppt. Two staging areas were sampled: (1) the north staging area, just south of the excavation areas, and (2) the south staging area, near the EPA Command Post and site entrance. The north staging area sample (SFRA-152) contained a dioxin TEQ value of 1.9 ppt, and the dioxin TEQ value for the southern staging area sample (SFRA-155) was 1.46 ppt.

After discussions among EPA, the developer, and the property owner, it was determined that the rock that had been used on the roadway and staging areas for the RA would be removed from the site. The rock sample results obtained in July 2014 were submitted to the receiving facility for approval. The rock was removed and transported to the Champ Landfill in Maryland Heights, Missouri, in late October 2014. Restoration work was completed on October 31, 2014.

On August 1, 2014, The Sterling Company (Sterling) from St. Louis, Missouri, conducted land survey activities at the site. The excavation areas, the roadway, and the Bliss-Ellisville site property line were surveyed. The final survey information appears on Figures 2 and 3 in Appendix A.

6.0 LABORATORY DATA REVIEW

The EPA Region 7 Environmental Services Assistance Team (ESAT) was requested to review the CFA data packages. Summary reports indicating that overall data quality and completeness were acceptable are in Appendix D (provided on CD). The final data packages from CFA were sent to Deana Crumbling, sampling statistician at EPA HQ in Washington, D.C., for review and calculation of Kaplan-Meier dioxin TEQ concentrations. Those calculated values were used in the tables included in this report.

7.0 SUMMARY

Tetra Tech START was tasked by the EPA Region 7 Superfund Division to assist with an RA at the Ellisville site in Wildwood, Missouri. Elevated dioxin concentrations had been identified at three areas within a proposed residential development area (Strecker Forest) during previous assessments. These soils were excavated during the RA for off-site disposal. For this RA, the site-specific RALs for dioxin TEQ levels were as follows: 820 ppt in surface soil (less than 12 inches bgs); 2,460 ppt in soil at depths greater than 12 inches bgs.

Specific elements of this task included (1) collection of post-excavation soil samples to confirm that site-specific RALs had been met, (2) sampling of excavated soils for disposal profiling analyses, (3) real-time air monitoring during soil excavation, and (4) soil sampling in the central and northern portions of the site to better define the extent of contamination. START also assisted with analytical services procurement, sample management, documentation of removal activities, and preparation of detailed maps and diagrams depicting excavated and sampled areas.

Nineteen pre-removal site characterization samples were submitted for TEQ analysis (including samples collected at the roadway, staging areas, and retention pond area). START also collected 63 post-excavation samples to confirm that the site-specific RALs had been met. From the roll-off boxes containing excavated soil, 72 samples were submitted for dioxin TEQ analysis. Another seven samples were submitted for laboratory analysis for waste profiling purposes. Two of the samples (roadway rock) collected during site activities were not submitted to the laboratory for analysis, but were screened by START for metals and VOCs by use of an XRF and PID, respectively.

Removal activities began on March 24, 2014, and excavation was completed on July 21, 2014. During the project, 101 roll-off boxes were filled and shipped off site for disposal. Seventeen boxes, containing 267.06 tons of dioxin-contaminated soil, were shipped to Canada for incineration. The remaining 84 boxes, containing 1,277.58 tons of dioxin-contaminated soil, were trucked to a RCRA-permitted landfill in Oklahoma for disposal.

After the excavated areas (including the retention pond) had been backfilled with clean soil and graded, they were seeded and mulched. Drainage pathways were covered with rock. Finally, rock was removed from the roadway used during the RA. The roadway that was in the work area was covered with 3 to 6 inches of backfill soil, seeded, and mulched. The remainder of the road was seeded. Site restoration activities were completed October 31, 2014.

8.0 REFERENCES

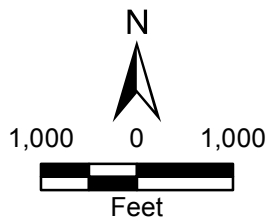
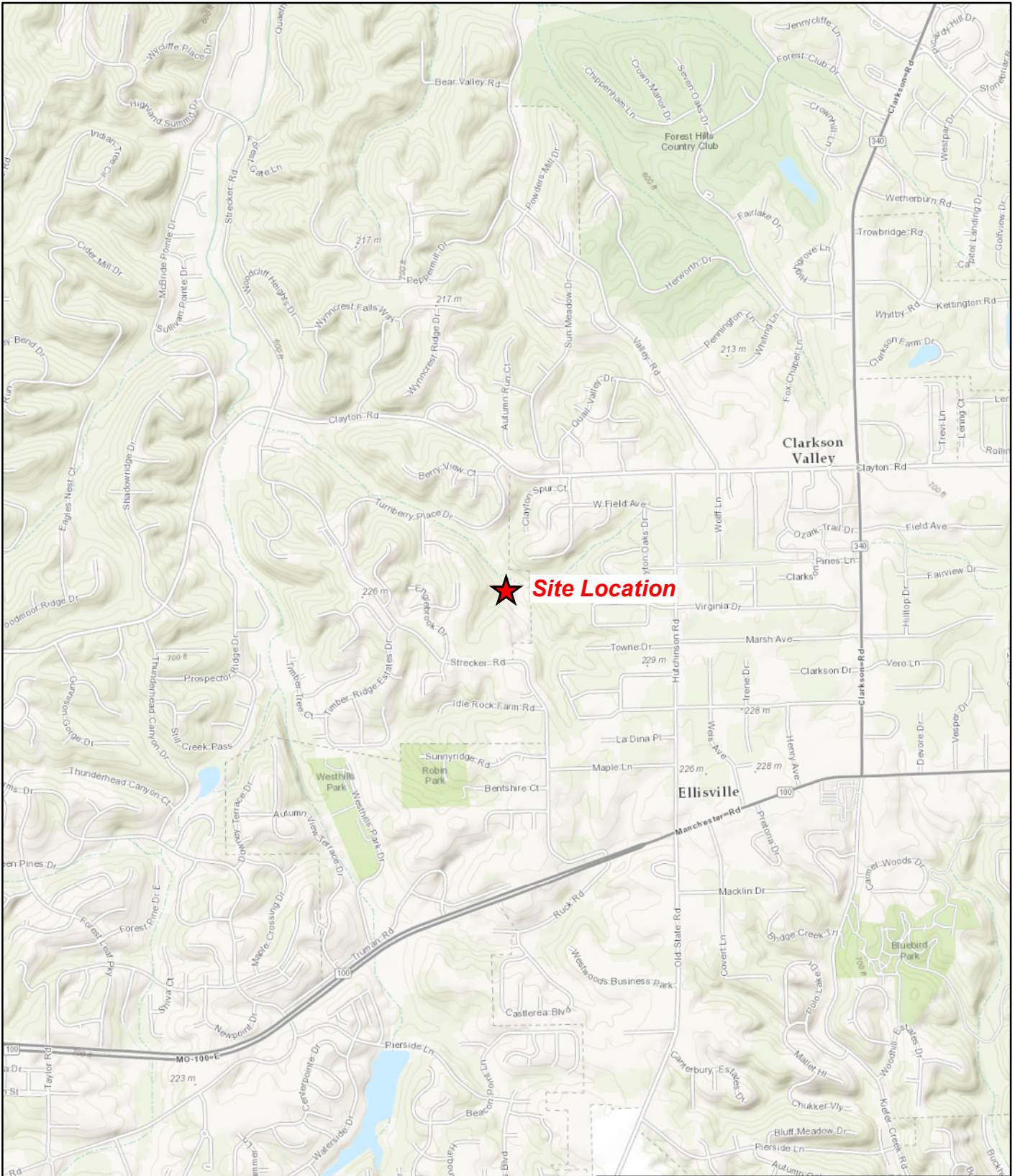
Tetra Tech EM Inc. 2012. *Site Reassessment Report for an Expanded Site Review, Proposed Strecker Forest Development Site, Wildwood, Missouri*. Superfund Technical Assessment and Response Team (START) Contract EP-S7-06-01, Task Order No. 0002.058. June 13.

Tetra Tech, Inc. (Tetra Tech). 2014. *Removal Site Evaluation Report, Bliss-Ellisville Site – Strecker Forest Subsite, Wildwood, Missouri*. Superfund Technical Assessment and Response Team (START) Contract EP-S7-06-01, Task Order No. 0014. April 24.

U.S. Environmental Protection Agency (EPA). 2013. Action Memorandum for a Removal Action at the Ellisville Site, Wildwood, Missouri. September 26.

APPENDIX A

FIGURES



Ellisville Site
Wildwood, Missouri

Figure 1
Site Location Map



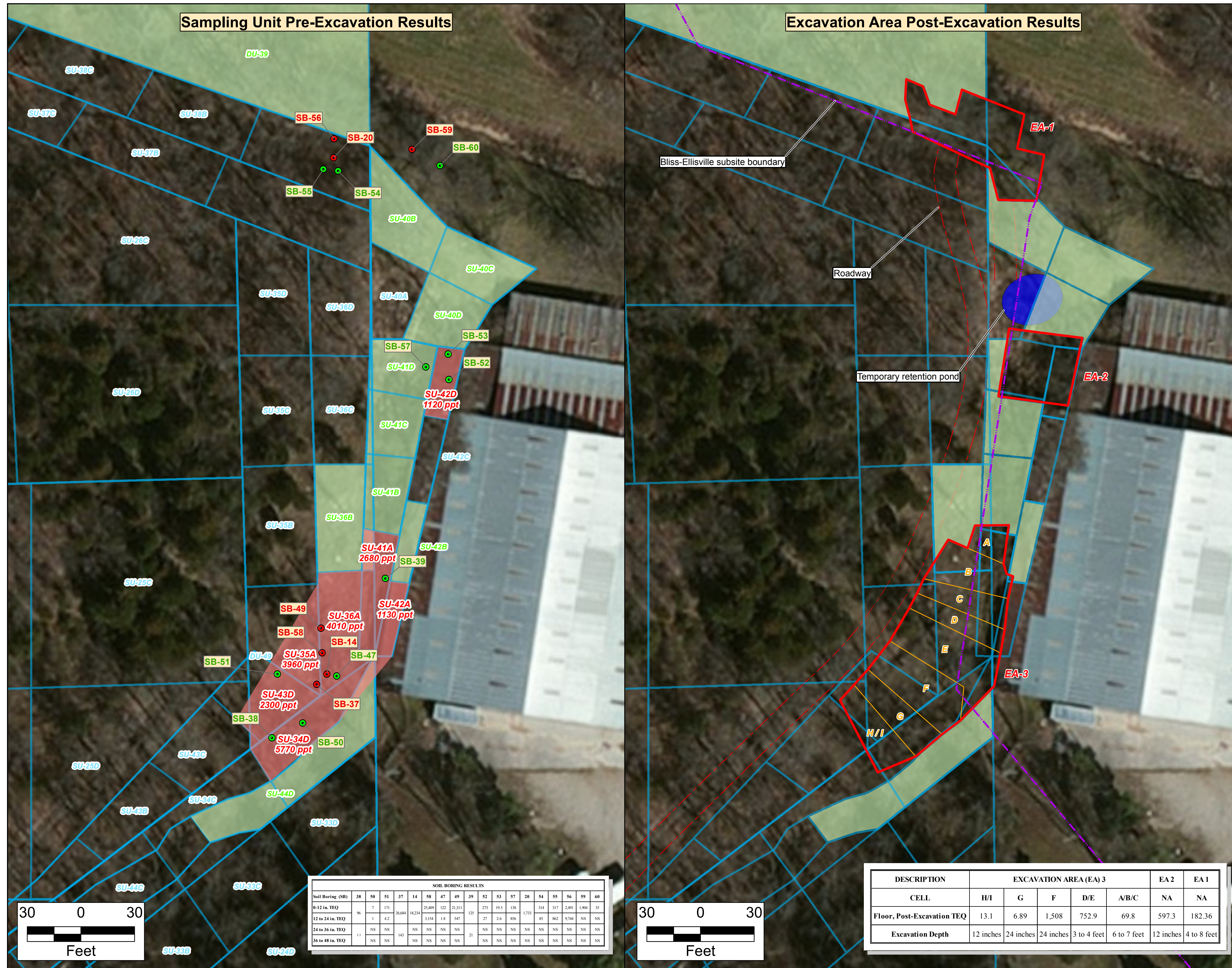
X:\G90250048\Project\mxd\Figure1.mxd

Source: ESRI Basemap, Topographic, 2013

Date: 10/29/2014

Drawn By: Gustavo Orozco

Project No: 103X9025140048.000



- Legend**
- Soil boring - below action level
 - Soil boring - above action level
 - Decision / sampling unit boundary
 - Excavation area
 - Excavation sub-area
- Pre-excitation sample results:**
- 50 - 820 ppt
 - > 820 ppt
 - NA Not applicable
 - NS Not sampled
 - ppt Parts per trillion
 - TEQ Toxic equivalence (dioxin) in ppt

SOIL BORING RESULTS																		
Soil Boring (SB)	38	50	51	37	14	58	47	49	39	52	53	57	20	54	55	56	59	60
0-12 in. TEQ	7	171			25,809	122	21,311		125	273	19.5	138		314	317	2,491	1,994	35
12 to 24 in. TEQ	1	4.2			3,154	1.8	347		27	2.6	894	1,731		30	362	9,304	NS	NS
24 to 36 in. TEQ	1.1	NS	NS		NS	NS	NS		NS	NS	NS	NS		NS	NS	NS	NS	NS
36 to 48 in. TEQ	1.1	NS	NS	143	NS	NS	NS	21	NS	NS	NS	NS		NS	NS	NS	NS	NS

DESCRIPTION	EXCAVATION AREA (EA) 3					EA 2	EA 1
	H/I	G	F	D/E	A/B/C	NA	NA
Floor, Post-Excavation TEQ	13.1	6.89	1,508	752.9	69.8	597.3	182.36
Excavation Depth	12 inches	24 inches	24 inches	3 to 4 feet	6 to 7 feet	12 inches	4 to 8 feet

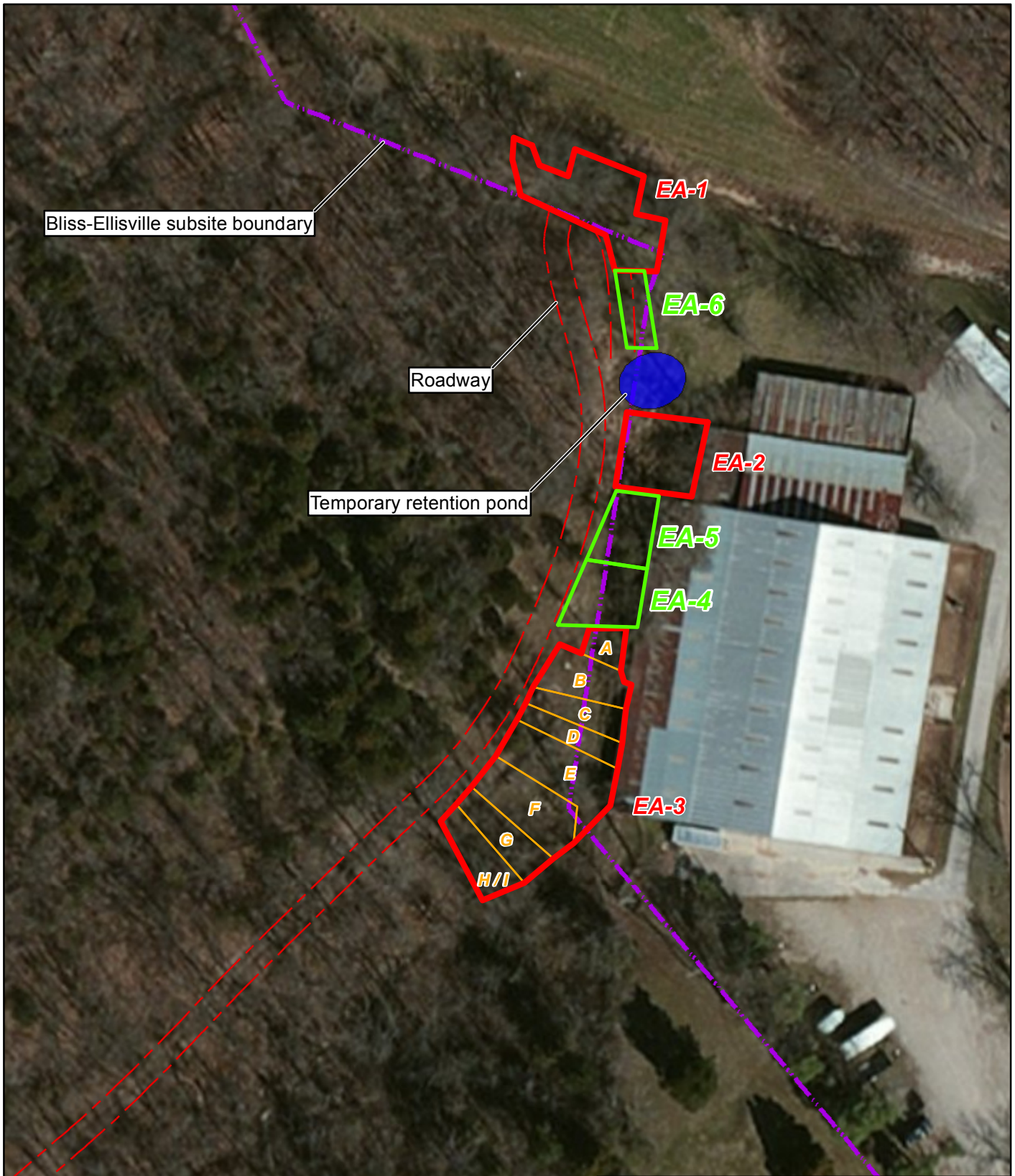
Ellisville Site
Wildwood, Missouri

Figure 2
Removal Activity Map

The Environmental Protection Agency does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any injury or loss resulting from the reliance upon the information shown.

Date: 11/20/2014 Drawn By: Colin Willis Path: X:\G\9025\0048\Projects\mxd\Figure2.mxd

Source: EPA Region 7, Strecker Forest GIS Data, 2012 - 2013; ESRI Basemap, Imagery, 2013; ESRI Basemap, National Geographic, 2013; ESRI Basemap, Topographic, 2013.



Bliss-Ellisville subsite boundary

Roadway

Temporary retention pond

EA-1

EA-6

EA-2

EA-5

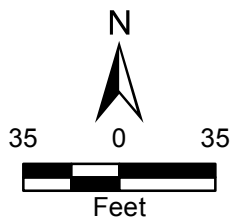
EA-4

EA-3

A
B
C
D
E
F
G
H/I

Legend

- Exploratory area
- Excavation area
- Excavation sub-area



Ellisville Site
Wildwood, Missouri

Figure 3
Exploratory Sampling Locations



X:\G90250048\Projects\mxd\Figure3.mxd

APPENDIX B
PHOTOGRAPHIC DOCUMENTATION

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northeast	DESCRIPTION	This photograph shows the site entrance driveway and upper support zone prior to brush clearing in preparation for removal activities.	1
	CLIENT	Environmental Protection Agency - Region 7	DATE 3/24/14
	PHOTOGRAPHER	Dave Kinroth	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northeast	DESCRIPTION	This photograph shows the site entrance driveway and upper support zone area after brush clearing in preparation for removal activities.	2
	CLIENT	Environmental Protection Agency - Region 7	DATE 3/25/14
	PHOTOGRAPHER	Dave Kinroth	

**Ellisville Site Removal Action
Wildwood, Missouri**



<p>TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northwest</p>	DESCRIPTION	This photograph shows Emergency and Rapid Response Services (ERRS) personnel grinding tree stumps in the upper support zone area in preparation for removal activities.	3
	CLIENT	Environmental Protection Agency - Region 7	DATE 3/25/14
	PHOTOGRAPHER	Dave Kinroth	



<p>TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: North</p>	DESCRIPTION	This photograph shows gabian stone being delivered to prepare site access roads and support zones for the removal action.	4
	CLIENT	Environmental Protection Agency - Region 7	DATE 3/26/14
	PHOTOGRAPHER	Dave Kinroth	

**Ellisville Site Removal Action
Wildwood, Missouri**



<p>TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: North</p>	DESCRIPTION	This photograph shows ERRS personnel laying base fabric in the area where gabian stone would be placed for a roadbed .	5
	CLIENT	Environmental Protection Agency - Region 7	DATE 3/26/14
	PHOTOGRAPHER	Dave Kinroth	



<p>TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: South</p>	DESCRIPTION	This photograph shows gabian stone on the haul road at the site.	6
	CLIENT	Environmental Protection Agency - Region 7	DATE 3/28/14
	PHOTOGRAPHER	Dave Kinroth	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: North	DESCRIPTION	This photograph shows the lower support zone and haul road (near completion) to be used for the removal action.	7
	CLIENT	Environmental Protection Agency - Region 7	DATE 3/28/14
	PHOTOGRAPHER	Dave Kinroth	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: East/Northeast	DESCRIPTION	This photograph shows ERRS personnel beginning excavation of dioxin-contaminated soil at the south end of Excavation Area (EA) 3.	8
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/7/14
	PHOTOGRAPHER	Dave Kinroth	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: East	DESCRIPTION	This photograph shows ERRS loading dioxin-contaminated soil into a roll-off box for transport to a disposal facility.	9
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/7/14
	PHOTOGRAPHER	Dave Kinroth	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Southeast	DESCRIPTION	This photograph shows an air monitoring station operated by Superfund Technical Assessment and Response Team (START) personnel during soil excavation activities.	10
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/7/14
	PHOTOGRAPHER	Dave Kinroth	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Southeast	DESCRIPTION	This photograph shows the south end of EA 3 as soil excavation was nearing completion.	11
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/8/14
	PHOTOGRAPHER	Dave Kinroth	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: East	DESCRIPTION	This photograph shows a roll-off box with excavated dioxin-contaminated soil being moved for temporary staging on site.	12
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/7/14
	PHOTOGRAPHER	Dave Kinroth	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northwest	DESCRIPTION	This photograph shows a roll-off box with excavated dioxin-contaminated soil being removed for transport to an off-site disposal facility.	13
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/22/14
	PHOTOGRAPHER	Dave Kinroth	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northeast	DESCRIPTION	This photograph shows an overview of EA 3 with excavation in progress.	14
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/23/14
	PHOTOGRAPHER	Dave Kinroth	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northeast	DESCRIPTION	This photograph shows excavation at EA 2.	15
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/25/14
	PHOTOGRAPHER	Rick Claytor	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: East	DESCRIPTION	This photograph shows dark-stained soil encountered during excavation at EA 3 (cells D and E).	16
	CLIENT	Environmental Protection Agency - Region 7	DATE 4/30/14
	PHOTOGRAPHER	Rick Claytor	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: East	DESCRIPTION	This photograph shows sampling of stained soil at EA 3.	17
	CLIENT	Environmental Protection Agency - Region 7	DATE 5/6/14
	PHOTOGRAPHER	Dave Kinroth	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Southeast	DESCRIPTION	This photograph shows the southeast portion of EA 1 after excavation to approximately 8 feet below ground surface (bgs) had been completed.	18
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/24/14
	PHOTOGRAPHER	Rick Claytor	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northeast	DESCRIPTION	This photograph shows ERRS excavating a vein of dark-stained soil at EA 3.	19
	CLIENT	Environmental Protection Agency - Region 7	DATE 6/28/14
	PHOTOGRAPHER	Rick Claytor	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northwest	DESCRIPTION	This photograph shows preparation for backfilling at EA 1, along the tributary to Caulks Creek on the north perimeter of the site.	20
	CLIENT	Environmental Protection Agency - Region 7	DATE 7/10/14
	PHOTOGRAPHER	Rick Claytor	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Southeast	DESCRIPTION	This photograph shows EA 3 after excavation had been completed, and the area had been backfilled with clean topsoil.	21
	CLIENT	Environmental Protection Agency - Region 7	DATE 7/14/14
	PHOTOGRAPHER	Rick Claytor	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Southeast	DESCRIPTION	This photograph shows EA 2 after excavation had been completed, and the area had been backfilled with clean topsoil.	22
	CLIENT	Environmental Protection Agency - Region 7	DATE 5/5/14
	PHOTOGRAPHER	Rick Claytor	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: South	DESCRIPTION	This photograph shows EA 1 after excavation had been completed, the area had been backfilled with clean topsoil, and rip-rap had been placed along the creek bank.	23
	CLIENT	Environmental Protection Agency - Region 7	DATE 7/30/14
	PHOTOGRAPHER	Rick Claytor	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: Northeast	DESCRIPTION	This photograph shows ERRS applying straw at EA 3 after the area had been backfilled with clean topsoil and seeded.	24
	CLIENT	Environmental Protection Agency - Region 7	DATE 8/1/14
	PHOTOGRAPHER	Rick Claytor	

**Ellisville Site Removal Action
Wildwood, Missouri**



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: North	DESCRIPTION	This photograph shows EA 1 after excavation had been completed, and seed and straw had been applied to clean topsoil backfill.	25
	CLIENT	Environmental Protection Agency - Region 7	DATE 8/1/14
	PHOTOGRAPHER	Rick Claytor	



TETRA TECH PROJECT NO. X9025.14.0048.000 DIRECTION: South	DESCRIPTION	This photograph shows gabian stone taken from the site haul road to line drainage pathways for erosion control at EA 3.	26
	CLIENT	Environmental Protection Agency - Region 7	DATE 8/1/14
	PHOTOGRAPHER	Rick Claytor	

**APPENDIX C
FIELD SHEETS (CD)**

**APPENDIX D
CHAIN-OF-CUSTODY RECORDS AND LABORATORY DATA (CD)**

**APPENDIX E
KM TEQ VALUES (CD)**

**APPENDIX F
AIR MONITORING RECORDS (CD)**

Backfill
Gravel #1

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

Project Number: START 4
Task order
0048.000 Matrix: Soil
Solid Sample Number: SFRA-1

Project ID: Strecker Forest Removal Action (RA) Project Manager: Heath Smith/Ave Kinroth
Location: Maryland Heights State: MO

Superfund Name: Strecker Forest Removal Action Site ID:

Location Description: North Quarry Screenings Sample (Maryland Heights)
External Sample Number: NA

Latitude: _____ Sample Collection: 2-13-14 Time: 915
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
<u>5 gal bucket</u>	<u>None</u>	<u>NA</u>	<u>- XRF RCRA Metals</u> <u>- VOCs by PID</u>

Property Owner Information:

Fred Weber Inc.

Sample Comments:

Sample Location Map:

- XRF Screening with Niton XLT3 Analyzer ID# 1544
- Lead - Pb = Non-detect (ND) < 10.6 parts per million (ppm)
 - Arsenic - As = ND < 8.1 ppm
 - Selenium - Se = ND < 6.4 ppm
 - Mercury - Hg = ND < 13.8 ppm
 - Volatile Organics Compounds (VOCs) by MultiRAE Plus PID
Non-detect = 0.0 ppm in sample jar headspace

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

Project Number: ^{START 4/1} ~~TASH~~ order 0048.000 Matrix: Soil/Solid Sample Number: SFRA-2

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kiroth
Location: St. Louis State: MO

Superfund Name: Strecker Forest Site ID: Removal Action

Location Description: South Quarry Screenings Sample (Baumgartner)

External Sample Number: NA

Latitude: _____ Sample Collection: 2-13-14 Time: 915
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
5 gal bucket	None	NA	XRF RCRA Metals VOCs by PID

Property Owner Information:

Fred Weber Inc.

Sample Comments:

XRF Screening with Niton XLT3 Analyzer ID # 1544

Sample Location Map:

- Lead - Pb = nondetect (ND) < 10.9 parts per million (ppm)
- Arsenic - As = ND < 8.6 ppm
- Selenium - Se = ND < 6.7 ppm
- Mercury - Hg = ND < 14.8 ppm
- volatile organics compounds (VOCs) by MULTRAE AUS PID non-detect = 0.0 ppm in sample jar headspace

Sample collected by: Kiroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-3

Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest Subsite

Location Description: Dardene Creek Farms / Proposed Backfill Soil Source

External Sample Number:

Latitude: Sample Collection: 2-13-14 Time: 1002
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz.	4°C	1yr.	1613B Dioxin/Furans
3 X 8oz.	4°C	7 days	SVOC, PCB, RCRA Metals
1 VOAS set - 5 vials	4°C	↓	VOC (5035)

Property Owner Information:

Dardene Creek Farms, Inc.
3153 Hopewell Rd.
Wentzville, MO 63385

Sample Comments:

Sample Location Map:

- 12 Aliquots from soil stockpile at landscaping facility to confirm it is clean and acceptable for backfill use for Strcker Forest Removal Action
- Wet weight soil
- Send 20 grams for dioxin analysis to Cape Fear Analytical - ^{they will} use 15 grams for extraction and 5 grams for % moisture determination

Sample collected by: Dave Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-4

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Excavation Area 3 - Sub cell H, I

External Sample Number:

Latitude: _____ Sample Collection: ~~12:22~~ ^{NA DK}
3-27-14 Time: 12:22
Longitude: _____

Laboratory Analysis:

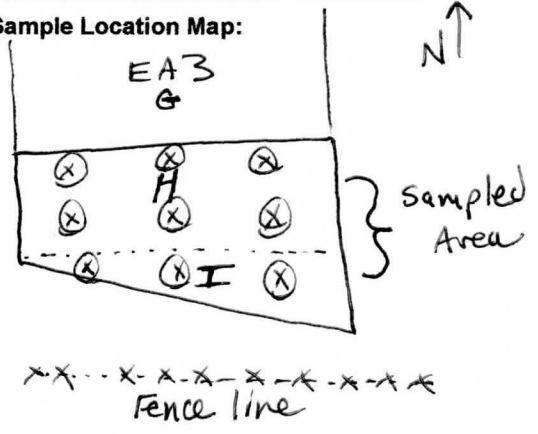
Container	Preservative	Holding Time	Analysis
2 x 32 oz.	None	NA 12:22 ^{NA DK}	Disposal Profile Analyses for Clean Harbors - Lone Mountain Landfill

Property Owner Information:

Sample Comments:

9 Aliquots; 0-1 foot deep collected from EA 3 sub areas H, I - sample transferred to Michael Hextell from Clean Harbors for disposal profile analyses for disposal at Lone Mountain Landfill (pre-approval sample)

Sample Location Map:



Sample collected by: Dave Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-5

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest sub site

Location Description: SFRA-5 EA3 H, I FLOOR

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-8-14

14:25

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

40C

NA

1613B

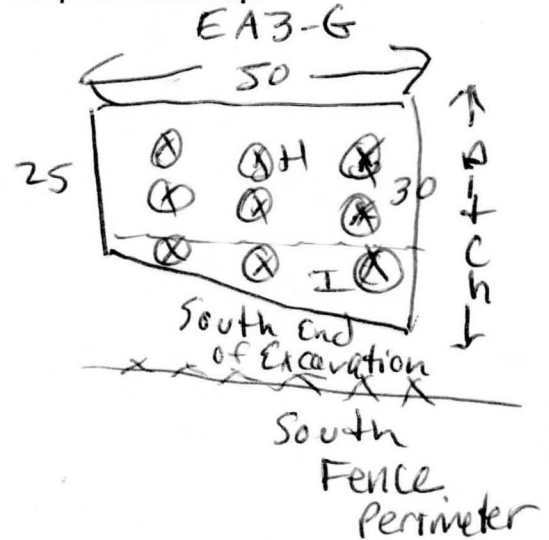
Property Owner Information:

On Site Excavation Cell # 1

Sample Comments:

9 Aliquots

Sample Location Map:



Sample collected by:

Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-6

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinnoth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest sub site

Location Description: Post Excavation Sidewalls EA3, H, I Wells A - South
B - West
C - East

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	NA	1613B

Property Owner Information:

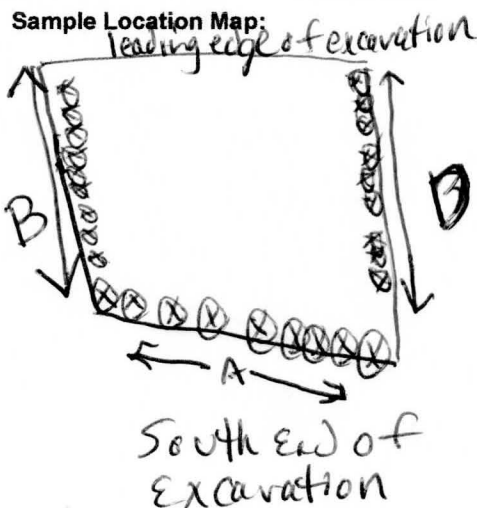
On Site Excavation Cell #1 - sidewalls

Sample Comments:

9 Aliquots each well

A, B, D \pm CS
Combined
sample

A, B, D held
in archive



Sample collected by: Kinnoth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-7
Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO
Superfund Name: Ellisville Site - Site ID: Strcker Forest sub site

Location Description: Dioxin Profile Excavated Soil boxes 4,5,6
External Sample Number:
Latitude: Sample Collection: Time:
Longitude:

Laboratory Analysis:

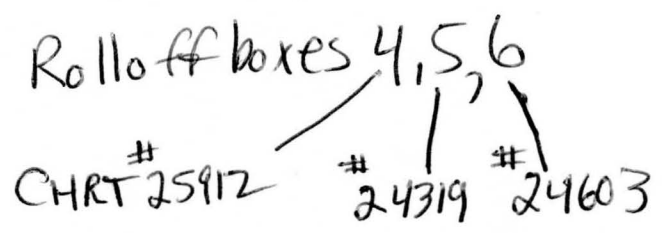
Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

Property Owner Information:

On Site Excavated Soil Boxes

Sample Comments:

Sample Location Map:



Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number:

0048.000

Matrix:

Soil

Sample Number:

SFRA-8

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinoth

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strcker Forest sub site

Location Description:

Dig in profile Boxes 7, 8, 9 SFRA-8

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-9-14

15:45

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°C

NA

1613B

Property Owner Information:

On Site Excavated Soil Boxes

Sample Comments:

Sample Location Map:

Box 7 = 26463

8 = 24848

9 = 24733

Sample collected by:

Kinoth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-9

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: SFRA-9

External Sample Number: Dioxin Profile Sample Boxes 10, 11, 12

Latitude: _____ Sample Collection: _____ Time: _____

Longitude: _____ 16:00 4-10-14

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
Yoz	Yoc	NA	1613B

Property Owner Information:

On Site Excavated Soil Kolloffs

Sample Comments:

Sample Location Map:

Box 10 = 24073
Box 11 = 24516
Box 12 = 24593

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-10

Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest subsite

Location Description: Post Excavation Subcell EA3-G 1-2 feet

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-10-14

16:20

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°C

NA

1613B

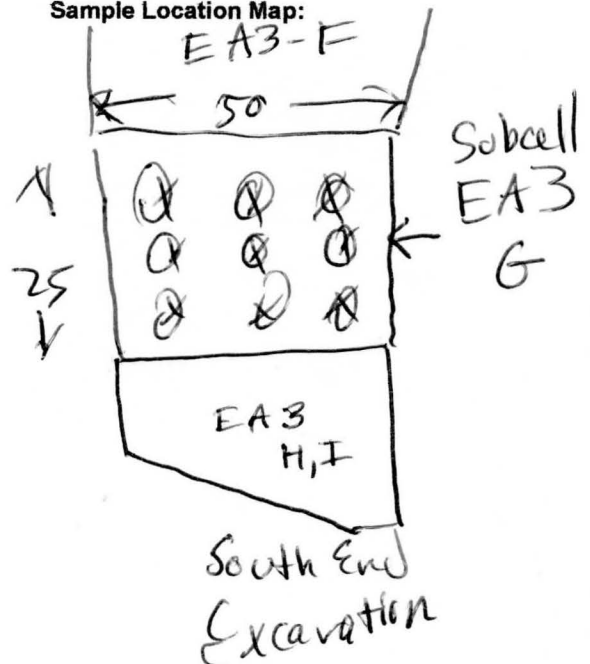
Property Owner Information:

On Site Excavation Cell 2

Sample Comments:

9 Aliquots

Sample Location Map:



Sample collected by:

Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-11

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: SFRA-11 EA3G Sidewalls B, D

External Sample Number:

Latitude: Sample Collection: Time:

Longitude: 4-10-14 16:25

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40C	NA	1613B

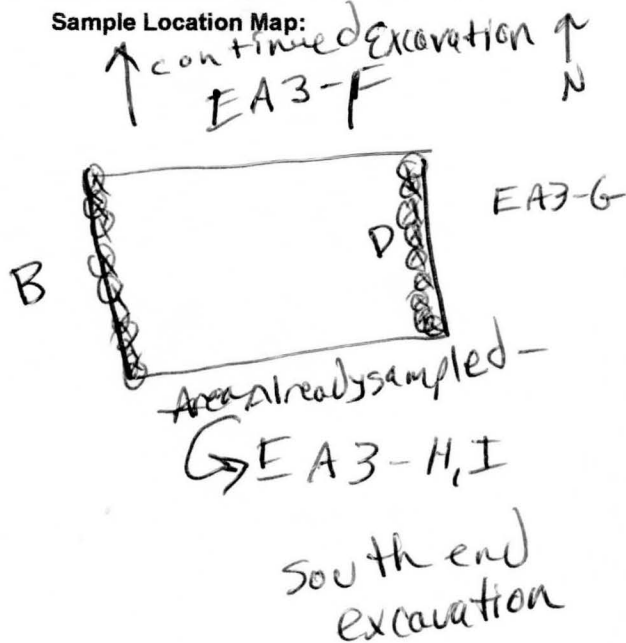
Property Owner Information:

On Site Excavation Cell #2 Sidewalls

Sample Comments:

9 aliquots each wall
B = west wall
D = east wall
= ICG Composite
B, D Held in
Archive

Sample Location Map:



Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-12

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinott

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: SFRA-12

External Sample Number: Dioxin Profile Sample Boxes 13, 14, 15

Latitude: _____

Sample Collection: _____

Time: _____

Longitude: _____

4-14-14

11:55

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4 oz.	4°C	NA	1613B

Property Owner Information:

On site Excavated Soil Rolloffs

Sample Comments:

Sample Location Map:

Box 13 = 26745

Box 14 = 25194

Box 15 = 26497

Sample collected by: Engmann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-13

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinross

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest sub site

Location Description: SFRA-13

External Sample Number: Dioxin Profile Sample Boxes 16, 17, 18

Latitude: _____

Sample Collection: _____

Time: _____

Longitude: _____

4-14-14

11:25

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4 oz.

4°C

NA

1613 B

Property Owner Information:

On Site Excavated Soil Rolloffs

Sample Comments:

Sample Location Map:

Box 16 = 26744

Box 17 = 26256

Box 18 = 26275

Sample collected by: Engeman

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-14

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: SFRA-14

External Sample Number: Dioxin Profile Sample Box 7

Latitude: _____ Sample Collection: 4-14-14 Time: 1310
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz.	4°C	NA	16B B

Property Owner Information:

On Site Excavated Soil Rolloffs

Sample Comments:

Sample Location Map:

Box 7: 26463

Sample collected by: Engemann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-15

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinneth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: SFRA-15

External Sample Number: Dioxin Profile Sample Box 8

Latitude: _____ Sample Collection: _____ Time: _____

Longitude: _____ 4-14-14 1325

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4 oz.	4°C	NA	1613 B

Property Owner Information:

On Site Excavated Soil Rolloffs

Sample Comments:

Sample Location Map:

Box 8: 24848

Sample collected by: Engemann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-16

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: SFRA-16

External Sample Number: Dioxin Profile Sample Box 9

Latitude: _____ Sample Collection: 4-14-14 Time: 1335
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4 oz.	4°C	NA	1613 B

Property Owner Information:

On Site Excavated Soil Rolloffs

Sample Comments:

Sample Location Map:

Box 9 = 24733

Sample collected by: Engemann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-17

Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest sub site

Location Description: SFRA-17 EABG Sidewall B

External Sample Number:

Latitude: Sample Collection: Time:
Longitude: 4-16-14 1547

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4 oz.	4°C	NA	16/B B

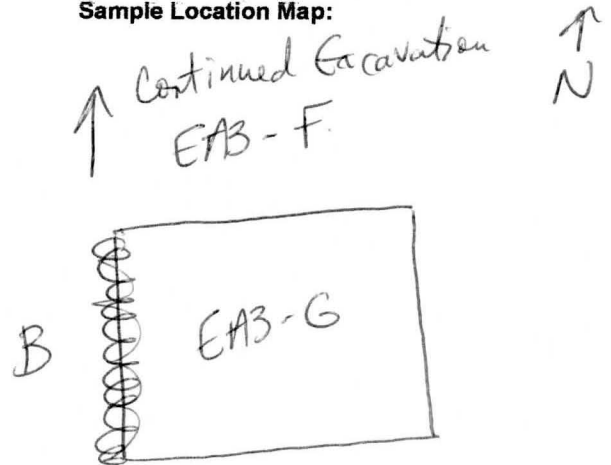
Property Owner Information:

On Site Excavation Cell #12 Sidewall B

Sample Comments:

B = West Wall

Sample Location Map:



Sample collected by: Engemann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-18

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: SFRA-18 EA3G Sidewall D

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-16-14

1555

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4 oz

4°C

NA

1613B

Property Owner Information:

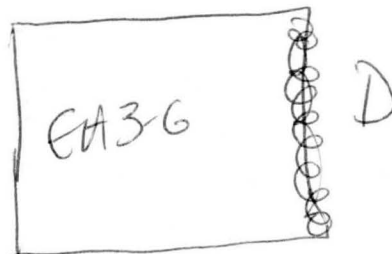
On Site Excavation Cell #2 Sidewall D

Sample Comments:

D = East Wall

Sample Location Map:

↑ Continued Excavation
EA3-F ↑
N



Sample collected by: Engemann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-19

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
stacker Forest subsite

Location Description: SFRA-19

External Sample Number: Dioxin Profile Sample Boxes 19, 20, 21

Latitude: _____

Sample Collection: _____

Time: _____

Longitude: _____

4-17-14

1620

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4 dz.

4°C

NA

1613B

Property Owner Information:

On site Excavated Soil Rolloffs

Sample Comments:

Sample Location Map:

Box 19 = 25912

Box 20 = 25399

Box 21 = 24271

Sample collected by: Egmann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-20

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
strucker Forest subsite

Location Description: Dioxin Profile Sample Boxes 22, 23, 24

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-21-14

15:55

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz.

4°C

NA

1613B

Property Owner Information:

On site Excavated Soil Rolloff boxes

Sample Comments:

Sample Location Map:

clean Harbors #

Box 22 = 26547

Box 23 = ~~25713~~ 24906 OK

Box 24 = 25713

Sample collected by:

Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START TASK order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-21

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub site

Location Description: EA3F Floor 1-2 feet

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

7-21-14

16:30

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

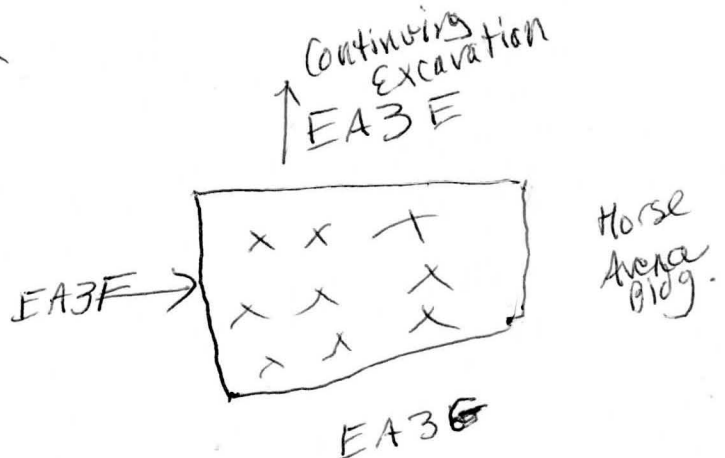
Property Owner Information:

On Site Excavation Cell 3 - Floor
9 Aliquots

Sample Comments:

9 Aliquots from
Excavation Floor

Sample Location Map:



Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START TASK order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-22

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinath
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: EA3F Sidewalls B,D

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-21-14

16:40

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40C	NA	1613 B

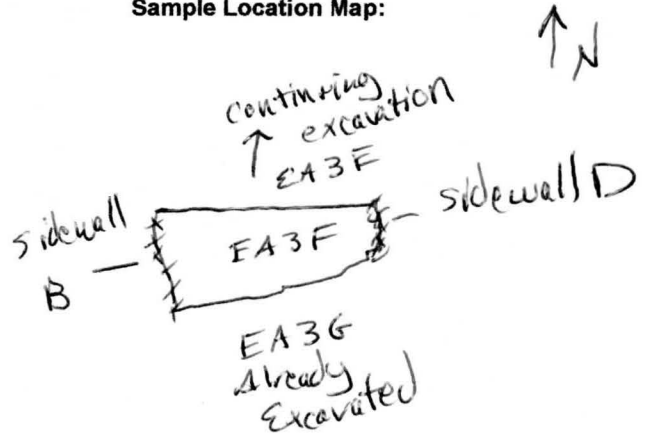
Property Owner Information:

On Site Excavation Cell 3 Sidewalls

Sample Comments:

ICS = 9 Aliquots Each Wall
B = West Wall
D = East Wall

Sample Location Map:



Sample collected by:

Kinath

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-23

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinath
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Post Excavation EA3-D, E Floor 1 foot deep

External Sample Number:

Latitude: _____

Sample Collection: 4-23-14

Time: 16:15

Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

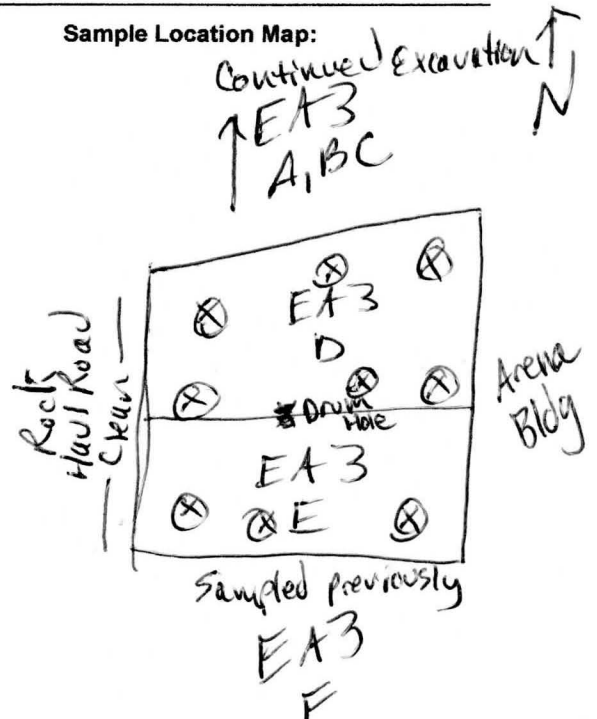
Property Owner Information:

On Site Excavation Cell 4

Sample Comments:

9 Aliquots from excavation
Floor

Sample Location Map:



Sample collected by: Kinath

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-24

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest sub site

Location Description: Post Excavation EA3-D, E Sidewalls B & D

External Sample Number:

Latitude: Sample Collection: 4-23-14 Time: 16:25
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

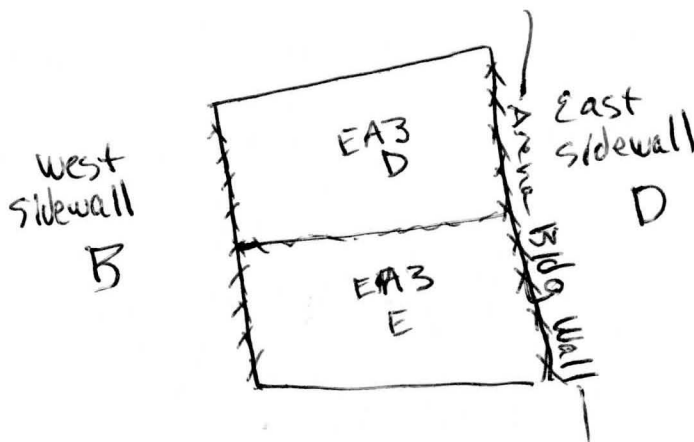
Property Owner Information:

On Site Excavation Cell 4

Sample Comments:

Sidewall B = West
Sidewall D = East
ICS Composite
9 Aliquots each wall
Combined into one sample

Sample Location Map:



Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-25

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kineth

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Unside Profile from Drum Pit in EA3E North Wall

External Sample Number:

Latitude: _____

Sample Collection:

Time:

Longitude: _____

4-23-14

16:30

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
3202	None	NA	CodeR Profile Analytical + TCLP Pesticide Herbicides

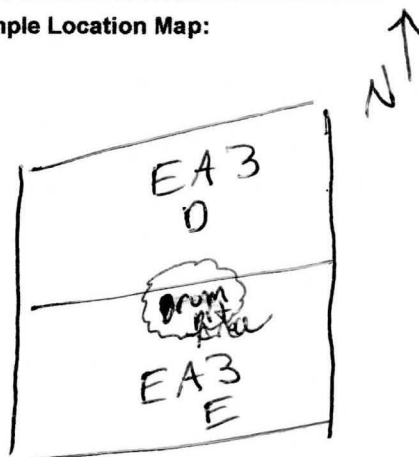
Property Owner Information:

On Site Excavation Cell 4 Drum Burial Pit Area

Sample Comments:

Disposal Profiling Analytical

Sample Location Map:



Sample collected by:

Kineth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-26

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest sub site

Location Description: EA2 Floor 6"-12"

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-28-14

1422

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

NA

1613B

Property Owner Information:

On site Excavation Cell ^{CAE} 2^e 6 - 9 Aliquots - Floor

Sample Comments:

Sample Location Map:

9 aliquots from Excavation
Floor

Sample collected by: Engemann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-27

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest Subsite

Location Description: EA2 Sidewalls A, B, C

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-28-14

1439

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4 oz.	4°C	NA	1613 B

Property Owner Information:

On Site Excavation Cell Le Sidewalls

Sample Comments:

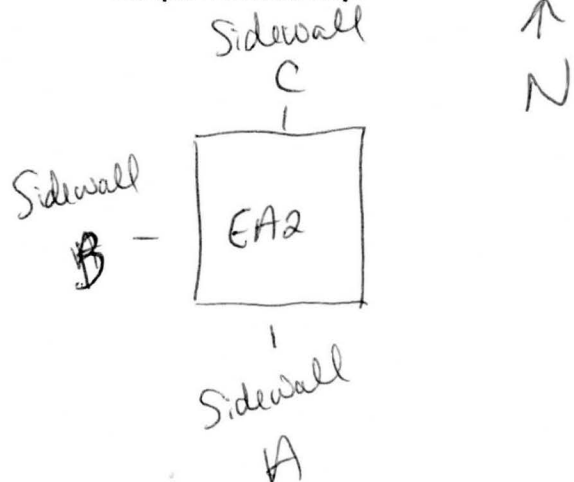
ICS = 9 Aliquots Each wall

A = South Wall

B = West Wall

C = North Wall

Sample Location Map:



Sample collected by: Eggemann

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-28

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EA3 G side wall D

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-29-14

16:38

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

Property Owner Information:

On site Exc cell 13A side wall D

Sample Comments:

Sample Location Map:

EA3 G

D = East wall

Sample collected by:

Clifford

Sample Collection Field Sheet

US EPA Region 7

Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-29

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EA2 D.E. Floor light soil

External Sample Number:

Latitude:

Sample Collection: 4-30-14

Time: 1105

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

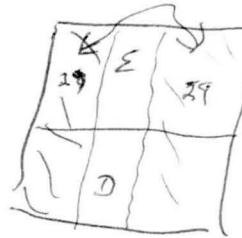
Property Owner Information:

On site Excavation

Sample Comments:

9 aliquots Floor of D.E.
light colored soil after 2nd lift
tot. 2' depth

Sample Location Map:



Sample collected by: Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-30

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EA3 DE floor deck soil

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

4-30-14

1112

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	NA	1613B

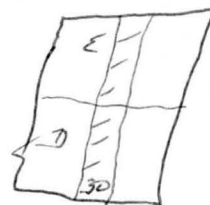
Property Owner Information:

On site Exc. EA3 DE, deck

Sample Comments:

9 aliquots from floor deck soil
after 2nd lift; 2' total depth

Sample Location Map:



EA3

Sample collected by: Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-31

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: EA1 Floor 3 SFRA-31

External Sample Number:

Latitude: Sample Collection: 5-2-14 Time: 1053

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	-	NA	1613B

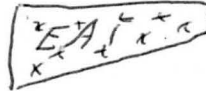
Property Owner Information:

On site Excavation EA1 Floor

Sample Comments:

9 aliquots

Sample Location Map:



Sample collected by: Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-32

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: EAI Side walls AACTD SFRA-32

External Sample Number:

Latitude: Sample Collection: 5/2/14 Time: 1100

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	-	NA	1613B

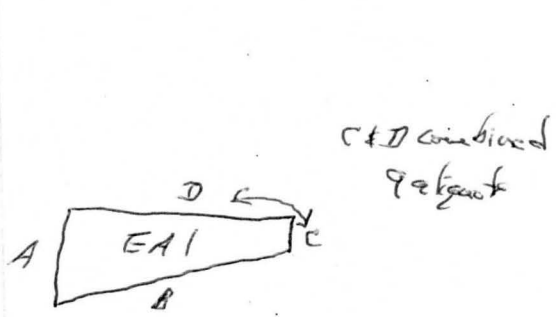
Property Owner Information:

On site Excavation EAI side walls 3' depth
A, B, C & D.

Sample Comments:

ICS = 9 aliquots
from A, B & CD
A = NW
B = S
C = SE
D = EN

Sample Location Map:



Sample collected by: R. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-33

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: SFRA-33

External Sample Number: Biotin Profile Sample Box 39

Latitude: _____ Sample Collection: 5-2-14 Time: 1000

Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	-	NA	1613B

Property Owner Information:

On site Soil Excavated From North part of EA1

Sample Comments:

Sample Location Map:

Box 39

#26256

Sample collected by: R. C. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-34

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave King

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stacker Forest Subsite

Site ID:

Location Description: EA3 DE Dark Burn area

External Sample Number:

Latitude:

Sample Collection: 5-6-14 Time: 1003

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
EA Case - 3 + 4oz amber			VOCs / % Solids
2oz jar			TCLA metals
4oz amber jar			PCBs
4oz amber jar			SVOCs

Property Owner Information:

Waste Profile sample 0-1' depth
8 aliquots

Sample Comments:

0-1' in Dark/Burn area of EA3 DE

Sample Location Map:

Sample collected by: RC / HS

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-35

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave King

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: EAB D&E Dark/Brown area

External Sample Number:

Latitude:

Sample Collection: 5-6-14

Time: 1025

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
Ea Core-3 2 oz jar	4oz jar - 1 None		VOCs & % Solids
4 oz amber jar			TCL & metals
4 oz amber jar			Pb As SVOCS

Property Owner Information:

Waste Profile sample 1-2' depth

8 aliquots

Sample Comments:

1-2' depth Dark/Brown area of EAB D&E

Sample Location Map:

Sample collected by:

PC/HS

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-36

Project ID: Straker Forest RA Project Manager: Heath Smith / Dave King
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Straker Forest Subsite

Location Description: EA3 D&E Dark/burn area

External Sample Number:

Latitude: Sample Collection: 5-6-14 Time: 1045

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
EnCore -3 & 402 amber jar 202 jar 402 amber jar 402 amber jar	None ↓	PH	VOCS / % Solids TCLP metals SVOCs PCBs

Property Owner Information:

Waste Profile sample 2-3' depth
8 aliquots

Sample Comments:

Sample Location Map:

2-3' depth Dark/burn area of EA3 D&E

Sample collected by: RC/H5

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-37

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAI side wall A

External Sample Number:

Latitude:

Sample Collection: 5/8/14

Time: 1335

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	FC	NA	1613B

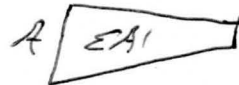
Property Owner Information:

On site excavation EAI side wall A (North)
West

Sample Comments:

9 Aliquots from wall A of EAI
composite of all walls (3, 170 ppt.)
collected 5-2-14 3' depth

Sample Location Map:



Sample collected by: RCapre

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-38

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinot

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest subsite

Location Description: EAI side wall B

External Sample Number:

Latitude:

Sample Collection: 5-8-14

Time: 1340

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	NA	1613B

Property Owner Information:

On site Exc EAI wall B (west side)
south

Sample Comments:

9 aliquots from wall B
collected 5-2-14 3' depth
composite of all walls (3, 19, 21)

Sample Location Map:



Sample collected by: [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-39

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinosh

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: EA1 Sidewalks C&D

External Sample Number:

Latitude:

Sample Collection: 5-8-14

Time: 1344

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	NA	16BB

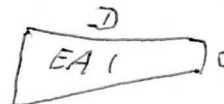
Property Owner Information:

On site etc EA1 Sidewalks C&D

Sample Comments:

9 aliquots from walls C&D
collected 5-2-14 3' depth
composite of 9 aliquots (7/19/14)

Sample Location Map:



Sample collected by: R. Smith

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number:

0048.000

Matrix:

Soil

Sample Number:

SFRA-40

Project ID:

Strucker Forest RA

Project Manager:

Heath Smith / Dave Kinot

Location:

wildwood

State:

MO

Superfund Name:

Ellisville Site -

Site ID:

strucker Forest sub site

Location Description:

Retention Pond

External Sample Number:

Latitude:

Sample Collection:

5-15-14

Time: 0830

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4 oz

4°C

NA

1613B

Property Owner Information:

surface of Retention pond

Sample Comments:

Sample Location Map:

R.P. between EA1 & EA2

Sample collected by:

R. Claytor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-41

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Profile sample Box 41 ~~41~~ 41
External Sample Number: ~~41~~ ~~41~~

Latitude: _____ Sample Collection: 5-15-14 Time: 1450
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	9°C	NA	1613A

Property Owner Information:

Sample Comments:

Soil Exc. from EA1
3-4' E N wall re-excavation

Sample Location Map:

41
Box 41 ~~41~~ = 24189
41

24189

Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-42

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrod
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Dioxin Profile Box 42, 43
External Sample Number: Re 42

Latitude: _____ Sample Collection: 5-16-14 Time: 0920
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402		NA	1613B

Property Owner Information:

Soil Excavated from EA-1 Re-Excavate

Sample Comments:

Box # 26745

Sample Location Map:

Sample collected by: R. Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-43

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinrod

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stacker Forest Subsite

Location Description: Dioxin Profile Box 43 44
R

External Sample Number:

Latitude:

Sample Collection: 5-16-14

Time: 1125

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

NA

1613B

Property Owner Information:

Soil Excavated from EA-1

Second excavation

Sample Comments:

Sample Location Map:

Box II 25399

Sample collected by:

R. Clifton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-44

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinrod

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Dioxin Profile Box 44 95

External Sample Number: Re

Latitude: Sample Collection: 5-16-14 Time: 1355

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402		NA	1613B

Property Owner Information:

Soil Excavated from EA 1

Sample Comments:

Sample Location Map:

Box #
26683

Sample collected by: R. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-45

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stacker Forest Subsite

Location Description: Dioxin Profile Box # 46

External Sample Number:

Latitude:

Sample Collection: 5-16-19

Time: 1706

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

NA

1613B

Property Owner Information:

Soil Excavated From EAC Remediation

Sample Comments:

Sample Location Map:

Box # 24300

Sample collected by:

R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-46

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinrod

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: EAS Floor A

External Sample Number:

Latitude:

Sample Collection: 5-16-14

Time: 1819

Longitude:

Laboratory Analysis:

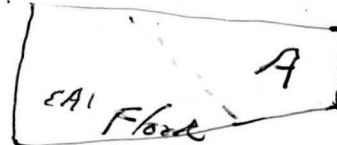
Container	Preservative	Holding Time	Analysis
403		NA	163B

Property Owner Information:

Part-Exc. Sample
4' depth Floor

Sample Comments:

Sample Location Map:



Sample collected by: R. C. G. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-47

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinrod

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Strucker Forest Subsite

Location Description: EAI Floor B

External Sample Number:

Latitude:

Sample Collection: 5-16-14

Time: 1823

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	-	NA	163B

Property Owner Information:

Asst Exc sample 4' depth
second lift

Sample Comments:

7-aligner

Sample Location Map:



Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-48

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinol

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest subsite

Location Description: EAI Side wall A

External Sample Number:

Latitude: Sample Collection: 5-16-14 Time: 1826

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
9oz			

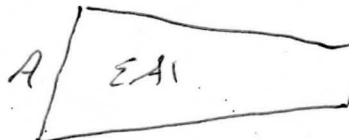
Property Owner Information:

EAI sidewall A (North) West

Sample Comments:

9 aliquots
4' wall

Sample Location Map:



Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-49

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinrod

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stacker Forest Subsite

Site ID:

Location Description: EAI side wall B (West)

External Sample Number:

Latitude:

Sample Collection: 5-16-14

Time: 1828

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

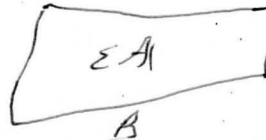
Property Owner Information:

EAI sidewalk B
second post exc.

Sample Comments:

9- aliquots
4' depth

Sample Location Map:



Sample collected by: R. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-50

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strucker Forest Subsite

Location Description: EAL side wall C (soa. fa)

External Sample Number:

Latitude:

Sample Collection: 5-16-14

Time: 1831

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
422		NA	1613A

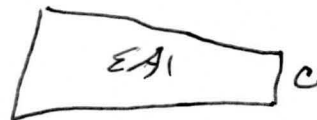
Property Owner Information:

No sample effected 2nd etc of EAL wall C

Sample Comments:

9 aliquots
4" depth

Sample Location Map:



Sample collected by:

A. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-50

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stucker Forest Subsite

Site ID:

Location Description: E#1 Sidewalk (D) (East)

External Sample Number:

Latitude:

Sample Collection: 5-16-14

Time: 1835

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402			1613B

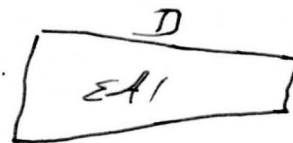
Property Owner Information:

Re-sample after re excavation Wall D

Sample Comments:

9 aliquots
4' depth

Sample Location Map:



Sample collected by: R. Chyler

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-52

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: wildwood

State: MO

Superfund Name: Ellisville Site -
Strcker Forest Subsite

Site ID:

Location Description: Diotia Pile Box 47

External Sample Number:

Latitude:

Sample Collection: 5/19/14

Time: 1045

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

NA

1613 B

Property Owner Information:

Box 47 filled with material from E-A3 F (dark)

Sample Comments:

Sample Location Map:

contains material from E-A1

& E-A3 F (dark)

Box # 26744

Sample collected by:

D Kincaid

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-53

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strcker Forest sub site

Location Description: Profile Dioxin sample from Box 48

External Sample Number:

Latitude:

Sample Collection: 5-19-14

Time: 1305

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°C

NA

1613B

Property Owner Information:

Box 48 filled with soil from EA3 ^{RESPT} E (dark)
E

Sample Comments:

Sample Location Map:

Box # 25408

filled w/ material from EA3 E (dark)

Sample collected by:

R. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-59

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stucker Forest Subsite Site ID:

Location Description: Profile 20Xia sample from Box 49

External Sample Number:

Latitude:

Sample Collection: 5-19-04

Time: 15:40

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	N/A	1613 B

Property Owner Information:

Material from EA3 E (dark)

Sample Comments:

Box # 26463

Sample Location Map:

Sample collected by:

R. G. Jones

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-55

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site -
Stacker Forest sub site Site ID:

Location Description: Profile sample from Box 38

External Sample Number:

Latitude:

Sample Collection: 5-19-14

Time: 1650

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	NA	1613B

Property Owner Information:

from Box 38 collected from the south part
of EAI initial excavation

Sample Comments:

Sample Location Map:

Box # 26442

Sample collected by:

R. G. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-56

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest Subsite

Location Description: Diaria Profile Box 50

External Sample Number:

Latitude:

Sample Collection: 5-21-14 Time: 1055

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

NA

1613B

Property Owner Information:

Soil Excavated from EAS E (dark)

Sample Comments:

Sample Location Map:

Box # 26295

Sample collected by:

L. Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-56

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strucker Forest sub site

Location Description: Diaria Profile Box 50

External Sample Number:

Latitude:

Sample Collection: 5-21-14 Time: 1055

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz		NA	1613B

Property Owner Information:

Soil Excavated from EASE (dark)

Sample Comments:

Sample Location Map:

Box # 26295

Sample collected by:

L Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-57

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub site

Location Description: Dioxin Profile Sample Box 51

External Sample Number:

Latitude:

Sample Collection: 5-22-14 Time: 1120

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40	NA	1613 B

Property Owner Information:

Soil excavated from EAZ E Dusk

Sample Comments:

Sample Location Map:

Box # 24035

Sample collected by:

R. G. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-58

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: Dioxin Profile Box 52

External Sample Number:

Latitude:

Sample Collection: 5-22-14

Time: 1345

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°

NA

1613 B

Property Owner Information:

Soil Excavated from EASE dork

Sample Comments:

Sample Location Map:

Box # 25658

Sample collected by:

R. Clifton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-59

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stacker Forest Subsite

Location Description: Drain Profile from Box 53

External Sample Number:

Latitude:

Sample Collection: 5-22-14

Time: 1420

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4.2	4'	NA	1613 B

Property Owner Information:

Soil Excavate from EA3 E (dark)

Sample Comments:

Box # 26147

Sample Location Map:

Sample collected by:

R. C. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-60

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stucker Forest Subsite

Site ID:

Location Description: Dioxin Profile Box 54

External Sample Number:

Latitude:

Sample Collection: 5-22-14

Time: 1550

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

NA

1613 B

Property Owner Information:

Soil Excavated from EA3 E (Clark)

Sample Comments:

Sample Location Map:

Box # 25301

Sample collected by:

R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-61

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest sub site

Location Description: Diavia Profile Box 55

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

5-28-14

1420

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	NA	1613B

Property Owner Information: Soil excavated from EAS D-E
dark

Sample Comments:

Sample Location Map:

Box # 24829

Sample collected by: R Cluff

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-02
Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO
Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Dioxin Profile Box 5-6

External Sample Number:

Latitude: Sample Collection: 5-28-14 Time: 1645

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
422	4°C	NA	1613B

Property Owner Information:

Soil Excavated from EAB D.E

Sample Comments:

Sample Location Map:

Box # 25227

Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-63

Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinrot

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest sub site

Location Description: EA4 A 2-4' depth

External Sample Number:

Latitude: Sample Collection: Time: 1010

Longitude: 5-29-14

Laboratory Analysis:

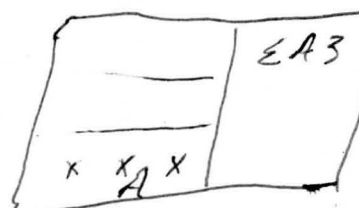
Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

Property Owner Information:

3 aliquots 2-4' depth

Sample Comments:
geoprobe

Sample Location Map: ← N



Sample collected by: AC

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-64

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinrot

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest subsite

Location Description: EA4 A 0-2'

External Sample Number:

Latitude: Sample Collection: Time: 1050

Longitude: 5-29-14

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	N/A	1613A

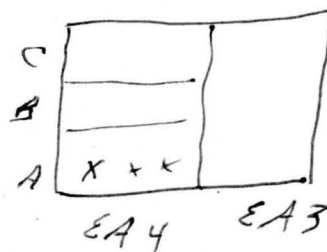
Property Owner Information:

3 aliquots 0-2' depth

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by: R. G. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-65

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest sub site

Location Description: EA4 C 2-4' depth

External Sample Number:

Latitude:

Sample Collection: 5-29-14

Time: 1107

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°

NA

1613B

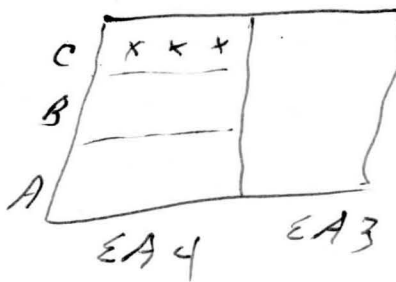
Property Owner Information:

3 aliquots 2-4' depth

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by:

A. C. Lytle

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-66

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinrot

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest sub site

Location Description: EA4 C 0-2'

External Sample Number: _____

Latitude: _____ Sample Collection: _____ Time: 1126

Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4.2	Y°	NA	1513B

Property Owner Information: 3 aliquots 0-2' depth

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by: R. Clifton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-67

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub site

Location Description: EA4 B 2-4'

External Sample Number:

Latitude:

Sample Collection: 5-29-14

Time: 1140

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

403

4°C

NA

1613B

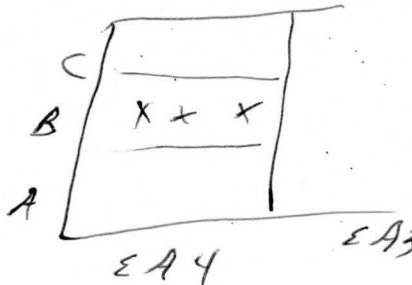
Property Owner Information:

3 aliquots 2-4' depth

Sample Comments:

geo probe

Sample Location Map:



Sample collected by: R. Carter

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-68

Project ID: Stacker Forest R.A.

Project Manager: Heath Smith / D. Kinosh

Location: Wildwood, Mo.

State: Mo

Superfund Name: Ellisville Site Site ID:

Stacker Forest Sabite

Location Description: EA 4 B 0-2'

External Sample Number:

Latitude:

Sample Collection: 5-29-14

Time: 1200

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	NA	1615B

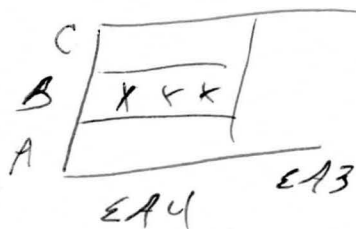
Property Owner Information:

3 aliquots 0.2' depth in EA4 B

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by:

R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-69

Project ID: Strecker Forest R.A.

Project Manager: H. Smith / D. Kinroth

Location: Wildwood

State: Mo

Superfund Name: Ellisville Site Site ID:

Strecker Forest Subsite

Location Description: EAS B 2-4'

External Sample Number:

Latitude:

Sample Collection:

Time: 1235

Longitude:

5-29-14

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°

NA

1613B

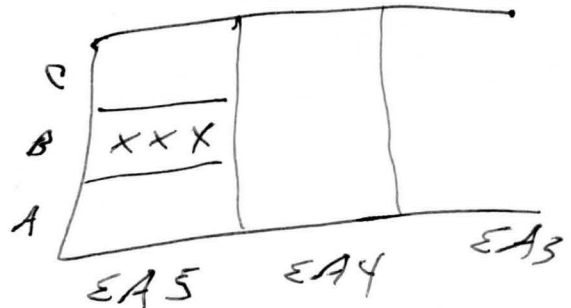
Property Owner Information:

3 aliquots 2-4' depth in EAS B

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by:

R. C. Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

Project Number: START TO 0048.000 Matrix: Soil Sample Number: SFRA-70

Project ID: Streckler Forest RA Project Manager: H. Smith/D. Kinroth
Location: Wildwood State: Mo.

Superfund Name: Ellisville Site ID:
Streckler Forest RA

Location Description: EAS B 0-2' depth

External Sample Number: _____

Latitude: _____ Sample Collection: 5-29-14 Time: 1255

Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
<u>402</u>	<u>4°</u>	<u>NA</u>	<u>1613B</u>

Property Owner Information:

3 aliquots 0-2' depth from EAS B

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by: R. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-71

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stacker Forest Subsite

Site ID:

Location Description: EA2 D 2-4'

External Sample Number:

Latitude:

Sample Collection: 5-29-14

Time: 1313

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°

NA

1613B

Property Owner Information:

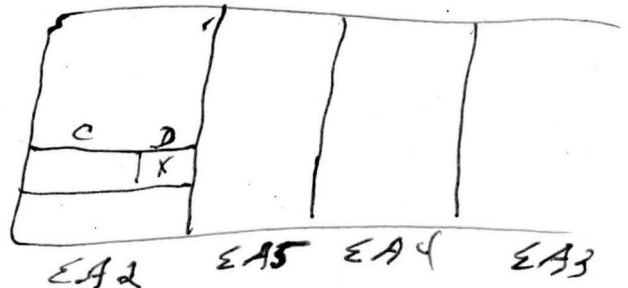
Grab

2-4' depth Peave EA2 D

Sample Comments:

grab probe

Sample Location Map:



Sample collected by: Rehta

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-72

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kincaid

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub site

Location Description: EA2 C 2.9'

External Sample Number:

Latitude: Sample Collection: 5-29-14 Time: 1325

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4'	NA	1613 B

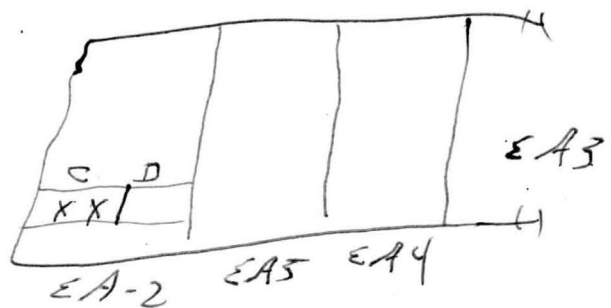
Property Owner Information:

2 aliquots 2-4" depth from EA2 C

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-73

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinol

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub-site

Location Description: Dioxin Profile Box 57

External Sample Number:

Latitude:

Sample Collection: 5-29-14

Time: 1338

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4'	NA	163B

Property Owner Information:

Soil Excavated from EA3 D-E

Sample Comments:

Sample Location Map:

Box # 26660

Sample collected by: R. Chyler

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-74

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kincaid

Location: wildwood

State: MO

Superfund Name: Ellisville Site -
Stucker Forest sub site

Site ID:

Location Description: Dioxin Profile Box 58

External Sample Number:

Latitude:

Sample Collection: 5-30-14

Time: 0955

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

NA

1613B

Property Owner Information:

Soil from EA 3 DE deck

Sample Comments:

Sample Location Map:

Box # 26745

Sample collected by:

R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-75

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kincaid

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Dixie Profile Box 59

External Sample Number:

Latitude: Sample Collection: 5-30-14 Time: 1110

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	NA	1613B

Property Owner Information:

Soil Excavated from EAS D-E
Dark ..

Sample Comments:

Box # 25713

Sample Location Map:

Sample collected by: RC

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-76

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stacker Forest Subsite

Location Description: Dioxin Profile Box 60

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

6-5-14

1230

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

40C

1yr

1613B

Property Owner Information:

Sample Comments:

Sample Location Map:

Soil From Area EA3 subcell C

24785

Sample collected by:

Kinosh

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-77

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinoth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Dioxin Profile Box 61

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

6-5-14

1235

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°C

1 yr.

1613 B

Property Owner Information:

Sample Comments:

Sample Location Map:

Soil from EA3 Subcell C

25495

Sample collected by:

Kinoth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-78

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest Subsite

Location Description: Dioxin profile Box 62

External Sample Number:

Latitude: Sample Collection: 6-5-14 Time: 1240
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1 yr.	1613B

Property Owner Information:

Sample Comments:

Soil from EA3 subcell C
Box # 25023

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-79

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest sub site

Location Description: Dioxin Profile, Box 63

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

6-5-14

1435

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1yr	1613B

Property Owner Information:

Sample Comments:

Sample Location Map:

Soil from EA3 subcell C

25371

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-80

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest Subsite

Location Description: Diolin Profile Box 64

External Sample Number:

Latitude: Sample Collection: 6-5-14 Time: 1447
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	6yr	1613B

Property Owner Information:

Box 64

Sample Comments:

soil from EAS subcell areas A+B

24673

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-81

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Dioxin Profile Box 65

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

6-5-14

15:50

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°C

4yr.

1613B

Property Owner Information:

Box 65

Sample Comments:

soil from ET3 subcell areas A+B

25404

Sample Location Map:

Sample collected by:

Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-82

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest sub site

Location Description: Dioxin profile Box 66

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

6-6-14

16:28

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1yr.	1613B

Property Owner Information:

Box 66

Sample Comments:

EA3
soil from areas A+B
subcells

Sample Location Map:

26147

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-83

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinnoth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Dioxin profile Box 67

External Sample Number:

Latitude: Sample Collection: Time: 16:35

Longitude: 6-6-14 16:38 AOK

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1 yr.	16:35

Property Owner Information:

Box 67

Sample Comments:

Sample Location Map:

soils from EA3 subcells A + B areas

Box # 25448

Sample collected by: Kinnoth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-84

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinnoth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Proximal Profile Box 68

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

6-6-14

16:39

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

40C

~~6-6-14~~
1 yr.

1613B

Property Owner Information:

Box 68

Sample Comments:

Soil from EAS subcells A+B areas

Sample Location Map:

25301

Sample collected by:

Kinnoth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-05

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Proxin Profile Box 69

External Sample Number:

Latitude: Sample Collection: Time:

Longitude: 6-6-14 1727

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1yr.	1613B

Property Owner Information:

Box 69

Sample Comments:

Soils from EA3 subcells
A+B Areas
#25988

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-86

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinneth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: EA3 pit floor subcells F, E, D ICS

External Sample Number:

Latitude:

Sample Collection:

Time:

Longitude:

6-6-14

16:58

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1 yr.	1613B

Property Owner Information:

Sample Comments:

Sample Location Map:

Area EA3 pit floor
Composite from subarea
Cells (F), E, D combined
already analyzed 4/21/14 #SFRA22
ICS Sample

Sample collected by:

Kinneth

Sample Collection Field Sheet

US EPA Region 7

Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-07

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinnoth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: EA3 Pit wells subcells F, E, D combined ICS

External Sample Number: 5260 4-21-14 #SFRA 23

Latitude: _____

Sample Collection: 6-6-14

Time: 17:10

Longitude: _____

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

40C

1yr.

1613B

Property Owner Information:

Sample Comments:

Sample Location Map:

Sample collected by: Kinnoth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-08

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EA3 pit walls subcells B & C East walls only = 0 side

External Sample Number: _____

Latitude: _____ Sample Collection: 6-6-14 Time: 1803
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40C	1803 14B	1613B

Property Owner Information:

Sample Comments:

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7

Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-89

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: EA3 pit wall subcell A North side only - black/grey soils

External Sample Number:

Latitude:

Sample Collection: 6-6-14

Time: 1805

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40C	1 yr.	1613B

Property Owner Information:

Sample Comments:

EA3 North Wall subcell A
Black/grey material

Sample Location Map:

Sample collected by:

Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-90

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAG B 0-2'

External Sample Number:

Latitude: Sample Collection: 8-9-14 Time: 1545

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1 yr	1613B

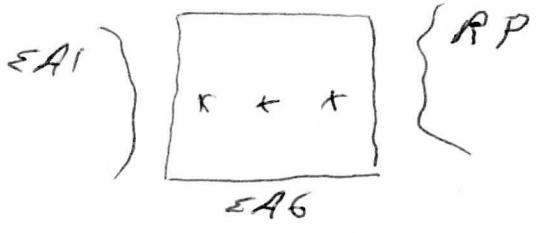
Property Owner Information:

3 aliquots 0-2' depth

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by: R. C. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

Project Number: 0048000

Matrix:

Sample Number: SFRA-91

Project ID: Strecker Forest R.A.

Project Manager: H. Smith / D. Kinosh

Location: Wildwood

State: MO

Superfund Name: Ellisville Site. Site ID:

Strecker Forest Subsite

Location Description: EAB B

2-4'

External Sample Number:

Latitude:

Sample Collection: 8-9-14

Time: 1550

Longitude:

6

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

1 yr

1613B

Property Owner Information:

EAB B 2-4' depth

3 aliquots

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by:

R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-92

Project ID: Stricker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stricker Forest sub site

Location Description: RP east 2-4'

External Sample Number:

Latitude:

Sample Collection: 5-9-14

Time: 1605

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1 yr	1613B

Property Owner Information:

Retention Pond east 2-4' depth
3 aliquots

Sample Comments:

GC/MS

Sample Location Map:



Sample collected by: R. Clifton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-23

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest subsite

Location Description: EAI SE 0-2'

External Sample Number:

Latitude:

Sample Collection: 8-9-14

Time: 1623

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1 yr	1613B

Property Owner Information:

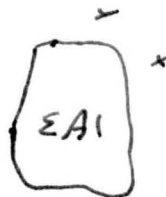
EAI SE 0-2' depth

2 aliquots

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by: R. Dwyer

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-94

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stacker Forest sub site

Site ID:

Location Description: EAISE 2-4'

External Sample Number:

Latitude:

Sample Collection: 5-9-14

Time: 1618

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4C

1 yr

1613B

Property Owner Information:

EAISE

2-4' depth

2 aliquots

Sample Comments:

geoprobe

Sample Location Map:



Sample collected by:

R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-95

Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinol

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest Subsite

Location Description: EAI SE 4-6'

External Sample Number:

Latitude: Sample Collection: 6-9-14 Time: 1700

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4.2	4°C	1 yr	1615B

Property Owner Information:

EAI SE 4-6'

2 aliquots SE grab

Sample Comments:

geo probe

Sample Location Map:



Sample collected by: R. D. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-96

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Box 70

External Sample Number:

Latitude:

Sample Collection: 8/9/14 Time: 1702

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°C	1 yr	1615 B

Property Owner Information:

Dioxin profile Box 70 from EA 3 A/B

Sample Comments:

Box #
24334

Sample Location Map:

Sample collected by: D.K.

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-97

Project ID: Stricker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stricker Forest Subsite

Location Description: Box 71

External Sample Number:

Latitude:

Sample Collection: 5/9/14

Time: 1705

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	1YR	1613B

Property Owner Information:

dioxin profile Box 71 phone EA3 A/B

Sample Comments:

Box # 25610

Sample Location Map:

Sample collected by: DS

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-98

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stacker Forest Subsite

Location Description: Dioxin Profile Box 72

External Sample Number:

Latitude:

Sample Collection: 6-11-14

Time: 1505

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

1 yr

1613 B

Property Owner Information:

Box 72 from EA 1

3rd dig

Sample Comments:

Box # 24035

Sample Location Map:

Sample collected by:

R. Cluff

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-99

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Strcker Forest sub site

Site ID:

Location Description: Dioxin Profile Box 73

External Sample Number:

Latitude:

Sample Collection: 6-11-14

Time: 1510

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

1 yr

1613B

Property Owner Information:

Box 73 plow soil excavated from EAL
3rd dig.

Sample Comments:

Box # 24307

Sample Location Map:

Sample collected by: R. Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-100

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Dioxin profile Box 74

External Sample Number:

Latitude:

Sample Collection: 6-17-14 Time: 1450

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°C	1 yr	1613B

Property Owner Information:

Box 74 Excavated from EAI
North portion of EAI

Sample Comments:

Sample Location Map:

Box # 24603

Sample collected by:

R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-101

Project ID: Strecker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest Subsite

Location Description: Austin Profile Box 75

External Sample Number:

Latitude:

Sample Collection: 6-17-14

Time: 1500

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°C

1 yr

1613B

Property Owner Information:

Box 75 excavated per EAI

Sample Comments:

Sample Location Map:

Box # 26497

Sample collected by:

R. Dwyer

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-102

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinol

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Strcker Forest sub site Site ID:

Location Description: Dioxin Profile Box 76

External Sample Number:

Latitude:

Sample Collection: 6-18-14

Time: 0905

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4	4	1 yr	1613 B

Property Owner Information:

Box 76 Eden EAL south/west

Sample Comments:

Sample Location Map:

Box # 26238

Sample collected by:

R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-103

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave King

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stucker Forest Subsite

Location Description: Dioxin Profile Box 77

External Sample Number:

Latitude:

Sample Collection: 6-18-14

Time: 0915

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°

1 yr

1613B

Property Owner Information:

Box 77 Plenum EA1 south/west

Sample Comments:

Sample Location Map:

Box # 25023
25279

Sample collected by:

R. Lopez

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-104

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave King
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: Dioxin profile Box 78

External Sample Number:

Latitude: Sample Collection: 6-18-14 Time: 1400
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4/22	4°	1 yr	1613B

Property Owner Information:

Box 78 from EA 1 south/west

Sample Comments:

Sample Location Map:

Box # 24921

Sample collected by:

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-105

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kiro
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAI Floor West part

External Sample Number:

Latitude: Sample Collection: 6-20-14 Time: 1111

Longitude:

Laboratory Analysis:

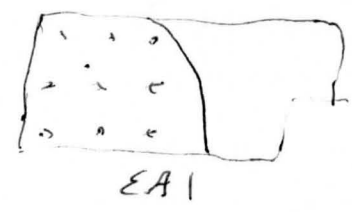
Container	Preservative	Holding Time	Analysis
422	4°	1 yr	1613B

Property Owner Information:

Post Exc. Below Floor of EAI
West Portion

Sample Comments:

Sample Location Map:



Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-106

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinn

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stacker Forest Subsite

Location Description: EAI (SW NW) corner

External Sample Number:

Latitude:

Sample Collection: 6-20-14

Time: 1116

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°

1 yr

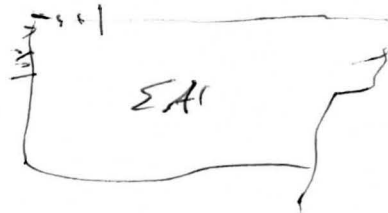
1613B

Property Owner Information:

Sidewalk of EAI Portion of N & W
0-4' depth

Sample Comments:

Sample Location Map:



Sample collected by:

R. Carter

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-107

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinn

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stucker Forest Subsite

Site ID:

Location Description: EAI SW South & West

External Sample Number:

Latitude:

Sample Collection: 6-20-14

Time: 1121

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

4oz

4°

1 yr

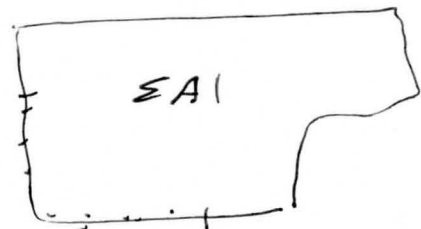
1615B

Property Owner Information:

side wall of EAI
7 aliquots
Part of
South & West walls

Sample Comments:

Sample Location Map:



Sample collected by:

R. Clifton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-108

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinn

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: Dioxin Profile Box 79

External Sample Number:

Latitude: Sample Collection: 6-20-14 Time: 1210

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4'	1 yr	1613B

Property Owner Information:

Box 79 Excavated from EAL west end

Sample Comments:

Sample Location Map:

Box # 25495

Sample collected by: R. Cleaveland

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-109

Project ID: Stracker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stracker Forest Subsite

Location Description: Diotia profile Box 80

External Sample Number:

Latitude:

Sample Collection:

Time: 1305

Longitude:

6-20-14

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613B

Property Owner Information:

Box 80 from EAI west (dark)

Sample Comments:

Sample Location Map:

Box # 25023

Sample collected by:

R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-110

Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest sub site

Location Description: Dioxin profile for Box 81

External Sample Number:

Latitude: _____ Sample Collection: 6-20-14 Time: 1525
Longitude: _____

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°	1 YR	1613 B

Property Owner Information:

Box 81 excavate from EAL west back/sue(1)

Sample Comments:

Box # 24699

Sample Location Map:

Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-111

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Dioxin Profile Box 82

External Sample Number:

Latitude:

Sample Collection: 6-23-14 Time: 1340

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4-2	4°	1 hr	1613B

Property Owner Information:

Box 82 excavated from EAL SE corner
deep

Sample Comments:

Sample Location Map:

Box # 25700

Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-112

Project ID: Stracker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stracker Forest Subsite

Location Description: Dioxin Profile Box 83

External Sample Number:

Latitude:

Sample Collection: 6-23-14

Time: 1405

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°	1hr	1613B

Property Owner Information:

Box 83 from EA1 SE corner

Sample Comments:

Sample Location Map:

Box # 24785

Sample collected by:

R. C. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-113

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAL Floor B (East)

External Sample Number:

Latitude: Sample Collection: 6-23-14 Time: 1734

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4	1 yr.	1613B

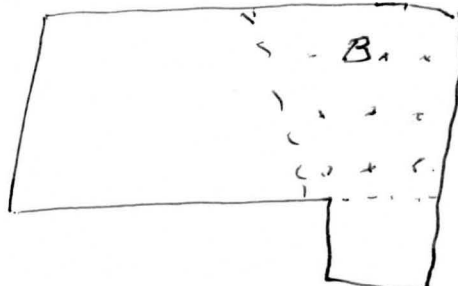
Property Owner Information:

post exc. sample from Floor of EAL East portion
7 aliquots

Sample Comments:

Exc depth 4-8'

Sample Location Map:



Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-114

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest sub site

Location Description: EA1 SW East

External Sample Number:

Latitude:

Sample Collection: 6-23-14

Time: 1740

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4'	1 yr	1613 B

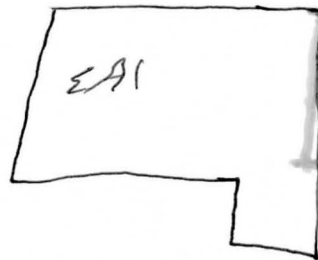
Property Owner Information:

Post Exc. side wall sample 0-8' depth

9 aliquots

Sample Comments:

Sample Location Map:



Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-115
Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinol
Location: Wildwood State: MO
Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite
Location Description: EAI Floor C (Notch)
External Sample Number:
Latitude: Sample Collection: 6-24-14 Time: 1200
Longitude:

Laboratory Analysis:

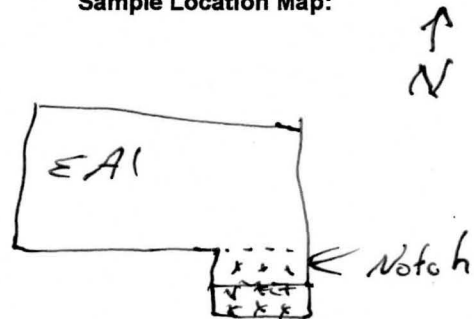
Container	Preservative	Holding Time	Analysis
402	4'	1 yr	1613B

Property Owner Information:

EAI Floor C [Notch in SE corner]
Past Exc.
Tsiguets 6' ft deep

Sample Comments:

Sample Location Map:



Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-116

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAI SW of Notch [A = west]

External Sample Number:

Latitude: Sample Collection: 6-24-14 Time: 1207

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°	1 yr	1613B

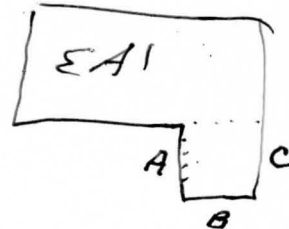
Property Owner Information:

EAI Sidewell of SE Notch west side (A)

6' + 9 aliquots

Sample Comments:

Sample Location Map:



Sample collected by: R. Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-117

Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strcker Forest Subsite

Location Description: EAI SW of Notch [B=South]

External Sample Number:

Latitude: Sample Collection: 6.24.14 Time: 1212

Longitude:

Laboratory Analysis:

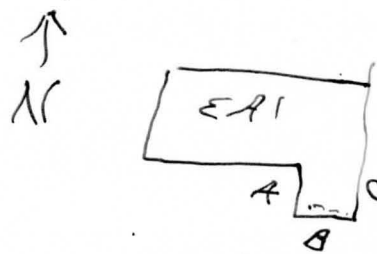
Container	Preservative	Holding Time	Analysis
4oz	4"	1 yr	163B

Property Owner Information:

EAI Notch sidewalk B=South
7.4 signs 6'+

Sample Comments:

Sample Location Map:



Sample collected by: _____

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-118

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EA (SW) of SE Notch Wall C = East

External Sample Number:

Latitude: Sample Collection: 6/24/04 Time: 1217

Longitude:

Laboratory Analysis:

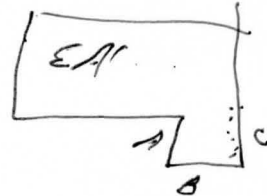
Container	Preservative	Holding Time	Analysis
402	4'	1 yr	1613B

Property Owner Information:

EA (SW) Notch East Wall
9 aliquots

Sample Comments:

Sample Location Map:



Sample collected by: R. S. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-119

Project ID: Stricker Forest RA

Project Manager: Heath Smith / Dave Kinrot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stricker Forest Subsite

Location Description: Dioxin profile Box 84

External Sample Number:

Latitude:

Sample Collection: 6-23-14

Time: 1700

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
802	4'	1 yr	1613B

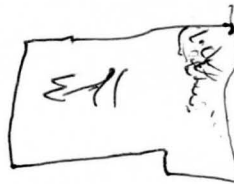
Property Owner Information:

Box 84 Excavated from EAI East End

Sample Comments:

Box # 25479

Sample Location Map:



Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-120

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinrot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest sub site

Location Description: Dioxin profile Box 85

External Sample Number:

Latitude: Sample Collection: 6-29-14 Time: 1645
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
802	90	1 yr	1613A

Property Owner Information:

Box 85 Excavated from EAI notch

Sample Comments:

Box # 25371

Sample Location Map:



Sample collected by: R. G. [Signature]

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-121

Project ID: Strcker Forest RA

Project Manager: Heath Smith / Dave Kinot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Strcker Forest sub site

Site ID:

Location Description: Dioxin Profile Box 86

External Sample Number:

Latitude:

Sample Collection: 6-24-14

Time: 1650

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
802	40	1 yr	163B

Property Owner Information:

Box 86 Excavated from EAI notch

Sample Comments:

Box II 25404

Sample Location Map:



Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-122

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinot
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Dioxin profile Box 87

External Sample Number:

Latitude:

Sample Collection: 6-25-9

Time: 1450

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr.	1613B

Property Owner Information:

Box 87, soil from EAS North end

Sample Comments:

Box # 2516

Sample Location Map:

Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-123

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinot

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAS ABC Top

External Sample Number:

Latitude:

Sample Collection: 6-26-14

Time: 1345

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	f ^o	1 yr	1613B

Property Owner Information:

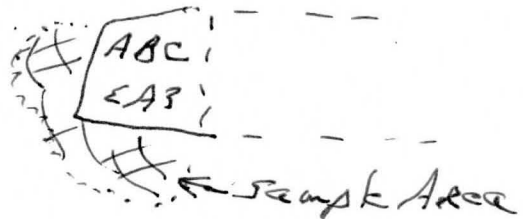
Post-EKC from the top section of EAS ABC

6-10" depth

Sample Comments:

Sample Location Map:

← N



Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-124

Project ID: Stricker Forest RA Project Manager: Heath Smith / Dave Kinot

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stricker Forest Subsite

Location Description: EA3 Floor AB

External Sample Number:

Latitude: Sample Collection: 6-27-14 Time: 1326

Longitude:

Laboratory Analysis:

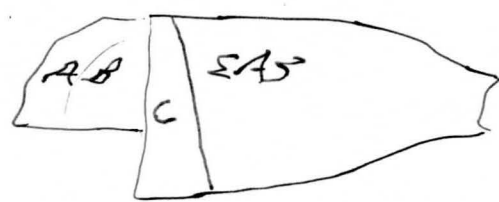
Container	Preservative	Holding Time	Analysis
402	4%	1 yr	1613B

Property Owner Information:

Asst Excavation from 2nd Floor of EA3 ABC
5-7' depth

Sample Comments:

Sample Location Map:



Sample collected by: R Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-125

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strucker Forest Subsite

Location Description: EA1 SW West & South 0-12"

External Sample Number:

Latitude:

Sample Collection: 6-30-14 Time: 1420

Longitude:

Laboratory Analysis:

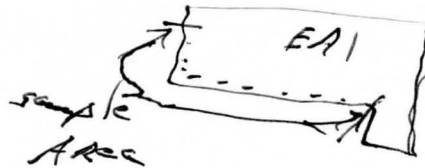
Container	Preservative	Holding Time	Analysis
402	4'	1 YR	1613B

Property Owner Information:

post excavation from sidewalls of EA1 West & South walls 0-12"

Sample Comments:

Sample Location Map:



Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-126

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAI SW Notch to NE corner 0.12'

External Sample Number:

Latitude: Sample Collection: 6-30-14 Time: 1930

Longitude:

Laboratory Analysis:

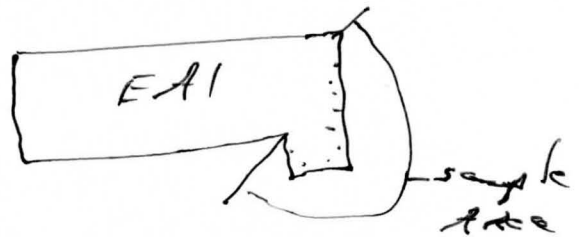
Container	Preservative	Holding Time	Analysis
902	9 ^c	1 yr	1513B

Property Owner Information:

Post excavation from side wells of EAI
from west corner of Notch to the NE corner

Sample Comments:

Sample Location Map:



Sample collected by: R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-127

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stucker Forest Subsite

Location Description: Dioxin Profile Box 88

External Sample Number:

Latitude:

Sample Collection: 6-30-14

Time: 1455

Longitude:

Laboratory Analysis:

Container

402

Preservative

4°

Holding Time

1 yr

Analysis

1613B

Property Owner Information:

Soil from EAL east end of Notch (Coburns)

Sample Comments:

Sample Location Map:

Box 2546

Sample collected by:

R. Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-128

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kingth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest sub site

Location Description: Profile Sample from EAI notch area

External Sample Number:

Latitude: Sample Collection: 6-30-14 Time: 1515

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	-	-	PCBs SVOCs

Property Owner Information:

Soil from EAI notch in boxes 87488

Sample Comments:

To Test America in Earth City
6-30-14

Sample Location Map:

Sample collected by:

R Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-129

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinosh

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Dioxin Profile Box 89

External Sample Number:

Latitude: Sample Collection: 7.1.14 Time: 0955

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40	145	1613B

Property Owner Information:

Box 89 from soil excavated from EAZA north

Sample Comments:

Box # 24307

Sample Location Map:

Sample collected by:

R. Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-130

Project ID: Stacker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
stacker Forest subsite

Location Description: Post-exc EA3 A NE SW

External Sample Number:

Latitude:

Sample Collection: 7-2-14

Time: 0910

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr.	1613B

Property Owner Information:

Post-excavation EA3 AS:dc wall NE corner

Sample Comments:

Sample Location Map:



Sample collected by:

Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-131

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strucker Forest Subsite

Location Description: EAL North Side Wall

External Sample Number:

Latitude:

Sample Collection: 7.2.14

Time: 1435

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4'	1 yr	1613B

Property Owner Information:

EAL North Wall

6-8'

Sample Comments:

Sample Location Map:

Sample collected by:

R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-132

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinosh

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: EAI NW corner Sidewall

External Sample Number:

Latitude: Sample Collection: 7.2.14 Time: 1430

Longitude:

Laboratory Analysis:

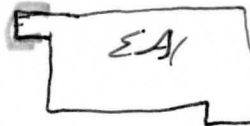
Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613 B

Property Owner Information:

EAI NW corner
Post Exc. 4' depth 9 aliquots

Sample Comments:

Sample Location Map:



Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-133

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stucker Forest Subsite

Location Description: Dioxin profile Box 90

External Sample Number:

Latitude:

Sample Collection: 7.2.14

Time: 1455

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613B

Property Owner Information:

Box 90 from EA (NW) corner

Sample Comments:

#24545

Sample Location Map:

Sample collected by:

clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-134

Project ID: Stricker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Stricker Forest Subsite

Location Description: EAI SE CORNER 12" Floor

External Sample Number:

Latitude:

Sample Collection: 7-8-14 Time: 1548

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°	1 yr	1613B

Property Owner Information:

EAI SE CORNER
Post-CXC 0-12" around the SE notch

Sample Comments:

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-135

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: EAI SE corner 0-12" side walk

External Sample Number:

Latitude: Sample Collection: 7-8-14 Time: 1552
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4'	1 yr	1613A

Property Owner Information:

EAI SE notch SW 0-12"
post-exc. 0-12" SW

Sample Comments:

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-136

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: Profile Box 91

External Sample Number:

Latitude: Sample Collection: 7-8-14 Time: 1530

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 hr	1613B

Property Owner Information:

Soil Excavated from EAC SE notch 0-12"

Sample Comments:

24921

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-137

Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stacker Forest Subsite

Location Description: Profile Box 92

External Sample Number:

Latitude:

Sample Collection: 7-8-14 Time: 1532

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613B

Property Owner Information:

Soil excavated from EAI SE notch 0.12" depth

Sample Comments:

Box # 24334

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-138

Project ID: Strecker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strecker Forest Subsite

Location Description: EAI NW Corner Floor

External Sample Number:

Latitude:

Sample Collection: 7-10-14 Time: 1423

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

40

1 yr.

1613A

Property Owner Information:

EAI NW CORNER 4' depth
Asst EXC. Floor

Sample Comments:

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-139

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest Subsite

Location Description: EAI Post-Exc. South Wall A

External Sample Number:

Latitude: Sample Collection: 7-10-14 Time: 1426

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40	1 yr.	1613B

Property Owner Information:

EAI NW corner SWA (south)

Post-Exc. 0-4'

Sample Comments:

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-190

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest sub-site

Location Description: E1 Post-Exc. NW corner

External Sample Number:

Latitude:

Sample Collection: 7-10-14 Time: 1429

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40	142	1613B

Property Owner Information:

E1 NW corner SWB (West)

Sample Comments:

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-141

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stucker Forest Subsite

Location Description: EAI Post-Exc NW Corner

External Sample Number:

Latitude:

Sample Collection: 7-10-14

Time: 1433

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°

1 YR

1613B

Property Owner Information:

EAI Post-Exc NW Corner (SWC - north)

Sample Comments:

Sample Location Map:

Sample collected by: Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-142

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kiroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Profile Box 93

External Sample Number:

Latitude: Sample Collection: 7-10-14 Time: 1936
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	40	1 yr	1613B

Property Owner Information:

Soil Excavated From EAL NW corner

Sample Comments:

Sample Location Map:

Box # 24699

Sample collected by: Kiroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-143

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinroth

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest sub-site

Location Description: Profile Box 99

External Sample Number:

Latitude: Sample Collection: 7-10-14 Time: 1438

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4"	1 yr	1613B

Property Owner Information:

Soil Excavated from EAL NW corner.

Sample Comments:

Box #24906

Sample Location Map:

Sample collected by:

Kinroth

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-144

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strucker Forest Subsite

Location Description: Profile Box 95

External Sample Number:

Latitude:

Sample Collection: 7-17-14

Time: 0900

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4°

1 yr.

1613B

Property Owner Information:

Soil excavated from EAC NW corner South wall, second excavation

Sample Comments:

Box # 24659

Sample Location Map:

Sample collected by: RC

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-195

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest sub site

Location Description: Profile Box 96

External Sample Number:

Latitude: Sample Collection: 7.17.19 Time: 0910

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°	1 yr	1613B

Property Owner Information:

Soil Excavated from EAC NW corner southeast of
South wall; 2nd Excavation

Sample Comments:

Box # 25399

Sample Location Map:

Sample collected by: R. Clifton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-146

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strucker Forest Subsite

Location Description: Profile Box 97

External Sample Number:

Latitude:

Sample Collection: 7.17.14

Time: 1455

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613A

Property Owner Information:

Box 97 Soil from EAL North Wall

Sample Comments:

26570

Sample Location Map:

Sample collected by:

R Claytor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-147

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Asst-Exc EAI NW corner South Wall

External Sample Number:

Latitude:

Sample Collection: 7.17.14

Time: 1515

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
502	4°	1 yr	1613B

Property Owner Information:

Asst-Exc. EAI NW corner
South Wall 1.3' depth 9 aliquots

Sample Comments:

Sample Location Map:



Sample collected by: C. Taylor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-198

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest sub-site

Location Description: Profile Box 98

External Sample Number:

Latitude: Sample Collection: 7.17.14 Time: 1530
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°	1 yr	1613B

Property Owner Information:

Soil Excavated from EAI North wall

Sample Comments:

24545

Sample Location Map:

Sample collected by: Chytor

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-149

Project ID: Strecker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strecker Forest Subsite

Location Description: Profile Box 99

External Sample Number:

Latitude:

Sample Collection: 7-21-14

Time: 1355

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613B

Property Owner Information:

Soil excavated from EAC North Wall west portion
0-4" depth

Sample Comments:

Box # 26238

Sample Location Map:

Sample collected by: clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-150

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinosh

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Stucker Forest Subsite

Location Description: Profile Box 180

External Sample Number:

Latitude:

Sample Collection: 7-21-14

Time: 1620

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

402

4'

1 yr

1613B

Property Owner Information:

Soil Excavated from EAC North Wall east portion

Sample Comments:

Sample Location Map:

Box # 25399

Sample collected by:

clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-151

Project ID: Strecker Forest RA Project Manager: Heath Smith / Dave Kinosh

Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strecker Forest Subsite

Location Description: Gravel Road Area 1

External Sample Number:

Latitude:

Sample Collection: 7-22-19 Time: 1015

Longitude:

Laboratory Analysis:

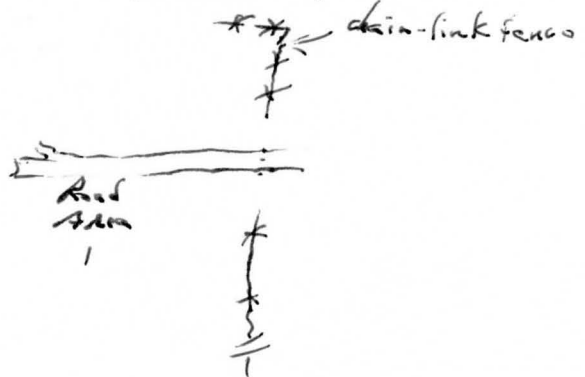
Container	Preservative	Holding Time	Analysis
403	4°	1 yr	1613B

Property Owner Information:

0.2" 12 Aliquots
North 1/3 of Road from North End to the south chain link fence

Sample Comments:

Sample Location Map:



Sample collected by: Clayton

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-152

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Gravel Staging Area 1

External Sample Number:

Latitude:

Sample Collection: 7-22-19 Time: 1030

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613B

Property Owner Information:

Gravel Staging Area from the chain link fence south to the
a side areas south of the Conex Box location

Sample Comments:

Sample Location Map:



Sample collected by: clayton

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-153
Project ID: Strcker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO
Superfund Name: Ellisville Site - Site ID: Strcker Forest Subsite
Location Description: Gravel Road Area 2
External Sample Number:
Latitude: Sample Collection: 7-22-14 Time: 1044
Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613 B

Property Owner Information:

8.2" 12 Aliquots Gravel Road from the Coney Box
= 475' South. E approx 1/2 way to the concrete near the
office trailer

Sample Comments:

Sample Location Map:



Sample collected by: Clayton

Sample Collection Field Sheet
US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-154
Project ID: Stacker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO
Superfund Name: Ellisville Site - Site ID: Stacker Forest sub site
Location Description: Gravel Road Area 3
External Sample Number: _____
Latitude: _____ Sample Collection: 7-22-14 Time: 1110
Longitude: _____

Laboratory Analysis:

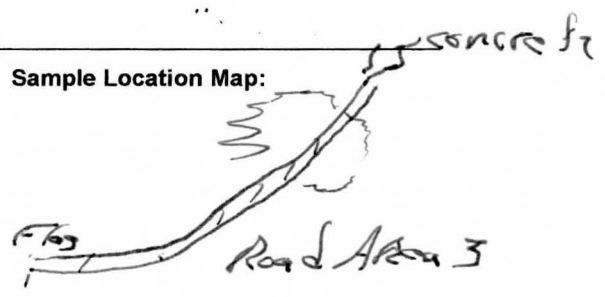
Container	Preservative	Holding Time	Analysis
422	4°	14R	1613B

Property Owner Information:

0-2" Gravel Road 12 Aliquots
≈ 475' from flagged location to concrete near office

Sample Comments:

Sample Location Map:



Sample collected by: clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-155

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub-site

Location Description: Gravel Staging Area 2

External Sample Number:

Latitude:

Sample Collection: 7/2/14

Time: 1115

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 yr	1613B

Property Owner Information:

0.2" 12 August, Includes staging dead end area, both sides just below the office trailer & all staging area south of the office

Sample Comments:

Sample Location Map:

Sample collected by: clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-156

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:

Strucker Forest Subsite

Location Description:

Retention And Floor

External Sample Number:

Latitude:

Sample Collection: 7/22/19

Time: 1340

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

422

4°

1 YR

16130

Property Owner Information:

9 Aliquots from Floor of the Retention Area.

Sample Comments:

Sample Location Map:

Sample collected by:

Clyde

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-157

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: EA1 North Wall Ast-Exc (East)

External Sample Number:

Latitude: Sample Collection: 7.22.14 Time: 1355

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
902	4°	1 yr	1613B

Property Owner Information:

Ast-Exc 0-4' Phase 0 EA1 North Wall East Portion

Sample Comments:

Some odor & staining

Sample Location Map:

Sample collected by: Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task Order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-158

Project ID: Strucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: Wildwood

State: MO

Superfund Name: Ellisville Site -
Strucker Forest Subsite

Site ID:

Location Description: EAI North Wall (West) As-Exc.

External Sample Number:

Latitude:

Sample Collection: 7-22-14

Time: 1405

Longitude:

Laboratory Analysis:

Container

Preservative

Holding Time

Analysis

40Z

F

1 yr

1613B

Property Owner Information:

As-Exc. from EAI North Wall west portion

f. Smith

Sample Comments:

Sample Location Map:

Sample collected by:

Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000

Matrix: Soil

Sample Number: SFRA-159

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: wildwood

State: MO

Superfund Name: Ellisville Site -
Stucker Forest sub-site Site ID:

Location Description: EAI NW corner South side wall 0-12"

External Sample Number:

Latitude:

Sample Collection: 7-22-14

Time: 1440

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4'	1 yr.	1613 B

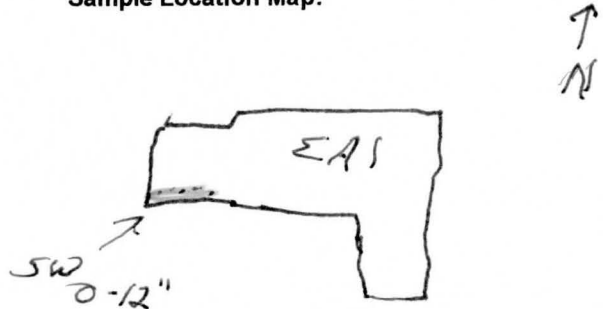
Property Owner Information:

Post-Exc. EAI NW corner South side wall 0-12" depth

9 Aliquots

Sample Comments:

Sample Location Map:



Sample collected by: Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-160

Project ID: Stucker Forest RA

Project Manager: Heath Smith / Dave Kinroth

Location: wildwood

State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub site

Location Description: EAI NW corner West Wall 1-4' depth

External Sample Number:

Latitude:

Sample Collection: 7-23-99

Time: 1620

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
402	4°	1 hr	1613 B

Property Owner Information:

Post-Exc. EAI NW corner West Wall 1-4' depth
9 A/ig 40 fr

Sample Comments:

Sample Location Map:



Sample collected by: Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-161

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinroth
Location: wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest sub-site

Location Description: EA1 NW corner West Wall 2-12"

External Sample Number:

Latitude: _____ Sample Collection: 7-23-14 Time: 1650

Longitude: _____

Laboratory Analysis:

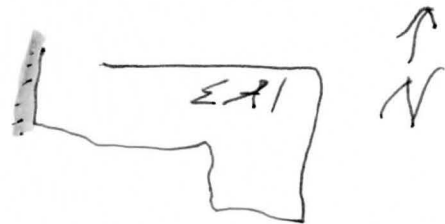
Container	Preservative	Holding Time	Analysis
4oz	4°	1 yr.	1615A

Property Owner Information:

EA1 NW corner West Wall 2-12" depth
Post Exc. 7 Aliquots

Sample Comments:

Sample Location Map:



Sample collected by: Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-162

Project ID: Strucker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Strucker Forest Subsite

Location Description: Profile Box 101

External Sample Number:

Latitude: Sample Collection: 7-30-14 Time: 0830

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	4°	1 yr	163B

Property Owner Information:

Box 101 soil from EA (North Wall East
portion) E NW corner

Sample Comments:

25408

Sample Location Map:

Sample collected by: R Clayton

Sample Collection Field Sheet

US EPA Region 7
Kansas City, KS

START Task order

Project Number: 0048.000 Matrix: Soil Sample Number: SFRA-163

Project ID: Stucker Forest RA Project Manager: Heath Smith / Dave Kinosh
Location: Wildwood State: MO

Superfund Name: Ellisville Site - Site ID:
Stucker Forest Subsite

Location Description: Back fill soil

External Sample Number:

Latitude: Sample Collection: 7-30-14 Time: 0955

Longitude:

Laboratory Analysis:

Container	Preservative	Holding Time	Analysis
4oz	40	1 yr	1613B

Property Owner Information:

Back fill delivered 7-29 & 7-30-14

Sample Comments:

Sample Location Map:

Sample collected by: CGY/AR

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 7
300 Minnesota Ave
Kansas City, KS 66101

METI / Alion Science & Technology

DATE: August 14, 2014

MEMORANDUM

TO: Barry Evans, *BEV*
ESAT Task Order Contract Officer Representative, Region 7 EPA

FROM: Rebecca Estep, *RE*
ESAT, Region 7, Senior QA Chemist

THRU: Ronald A. Ross, *RAR*
ESAT, Region 7 Team Manager

SUBJECT: Review of dioxin data report from Cape Fear Analytical dated 2/20/14-6/24/14, for the Ellisville Site Strecker Forest Development site in Wildwood, MO

Contract No:	EP-W-13-027
TDF No.	T0421
TO No.:	02
Subtask:	4-10
ESAT Document Control No.:	0702-004-0006
EPA Activity Number:	RQA421
Site ID/Operable Unit:	0708/OU00
GPRA Code:	303DD2

ESAT was requested to review 23 data packages for the Ellisville Strecker Forest Development Dioxin Superfund Site Data Assessments dated 2/20/14-6/24/14 from Wildwood, MO reports containing analytical results summary forms. ESAT was requested to verify the reported analytical results including proper qualification of data outliers, verify methods 1613B was followed, confirm appropriate QC was performed at the expected frequencies, and identify data from any samples that should be qualified differently from that identified in the laboratory's report. The review was conducted in accordance with EPA Region 7 SOP 2430.3H for validation of organic Contract Laboratory Program (CLP) data packages. As the PRP data were generated using Method 1613B method, some professional judgment was required in evaluation of the data versus SOP (NFG) requirements.

Summary

The subject data were reviewed and validated based only on the summary reports provided by Cape Fear Analytical LLC. Only minor discrepancies were noted, as discussed below. Overall data quality and completeness were acceptable based on the summary forms provided.

Appropriate samples and analyses were performed along with QC at the expected frequency. The analytical method used was 1613B. A limited amount of data were qualified as estimated (J), non-detect estimated (UJ), or as non-detect (U).

Samples that contain results between the EDL and the PQL were flagged with "J". Typically, EPA Region 7 reports the associated PQL with a "U" code and is considered a non-detect result.

Specific Comments

The ESAT review notes the following issues identified:

Samples included with Work Orders 6023 (7.2°C), 6086 (19.1°C), 6123 (10.1°C), and 6202 (9.4°C) were received at temperatures above control limits, however, as noted in the data packages, to proceed with analyses because temperature is not an issue on any of this material, therefore, no data were qualified.

Matrix spike/matrix spike duplicates (MS/MSDs) are not required, however, five MS/MSDs were analyzed with the associated data with outliers found (recoveries and relative percent differences) which are suspected of being matrix interferences. Since the associated LCS/LCSD results were within control limits, per the case narratives, no data would be qualified.

Several surrogates were diluted out. One low surrogate outlier was noted for 1,2,3,6,7,8-HxCDD (27.6% vs 28-130%) in sample SFRA-23 due to possible matrix interference, therefore, 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD should be UJ-coded as estimated results.

As noted in the several case narratives, a lg extraction was performed on several samples due to the high levels of target analytes that may be present.

Several analytes were found below the PQL in several method blanks, however, since associated data were non-detect or greater than ten times the level found, no data were qualified.

1,2,3,4,6,7,8,9-OCDD in sample SFRA-5 was above calibration range (E-coded) with no dilution found, therefore, should be qualified (J-coded) to show estimated results.

Samples SFRA-7 (10X), -8 (50X), -9 (20X), -11 (50X), -14 (5X), -15 (10X), -18 (2X), -19 (2X), -20 (2X), -30 (10X), -31 (10X), -33 (10X), -37 (5X), -41 (10X), -42 (10X), -43 (10X), -44 (10X), -45 (10X), -46 (10X), -47 (2X), -48 (5X), -51 (5X), -53 (20X), -54 (10X), -55 (10X), -56 (10X), -58 (10X), -60 (5X), -74 (10X), -75 (5X), -95 (5X), -99 (5X), -100 (10X), and -102 (5X) were analyzed at dilutions and have elevated reporting limits.

1,2,3,6,7,8-HxCDD in samples SFRA-59, -82, -83, and -85, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, and 1,2,3,5,8,9-HxCDF in sample SFRA-72, 1,2,3,4,7,8-HxCDD and 1,2,3,6,7,8-HxCDD in samples SFRA-74, -75, -78, -79, -81, -91, -96, and -97, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, and 1,2,3,7,8,9-HxCDD in sample SFRA-89 were identified as quantitative interference (Q-code).

Several samples were reanalyzed for 2,3,7,8-TCDF for confirmation.

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 7
300 Minnesota Ave
Kansas City, KS 66101

METI / Alion Science & Technology

DATE: September 2, 2014

MEMORANDUM

TO: Barry Evans, *BVE*
ESAT Task Order Contract Officer Representative, Region 7 EPA

FROM: Rebecca Estep, *RE*
ESAT, Region 7, Senior QA Chemist

THRU: Ronald A. Ross, *RRoss*
ESAT, Region 7 Team Manager

SUBJECT: Review of dioxin data report from Cape Fear Analytical dated 6/30/14-8/5/14, for the Ellisville Site Strecker Forest Development site in Wildwood, MO

Contract No:	EP-W-13-027
TDF No.	T0450
TO No.:	02
Subtask:	4-10
ESAT Document Control No.:	0702-004-0007
EPA Activity Number:	RQA450
Site ID/Operable Unit:	0708/OU00
GPRA Code:	303DD2

ESAT was requested to review 12 data packages for the Ellisville Strecker Forest Development Dioxin Superfund Site Data Assessments dated 6/30/14-8/5/14 from Wildwood, MO reports containing analytical results summary forms. ESAT was requested to verify the reported analytical results including proper qualification of data outliers, verify methods 1613B was followed, confirm appropriate QC was performed at the expected frequencies, and identify data from any samples that should be qualified differently from that identified in the laboratory's report. The review was conducted in accordance with EPA Region 7 SOP 2430.3H for validation of organic Contract Laboratory Program (CLP) data packages. As the PRP data were generated using Method 1613B method, some professional judgment was required in evaluation of the data versus SOP (NFG) requirements.

Summary

The subject data were reviewed and validated based only on the summary reports provided by Cape Fear Analytical LLC. Only minor discrepancies were noted, as discussed below. Overall data quality and completeness were acceptable based on the summary forms provided.

Appropriate samples and analyses were performed along with QC at the expected frequency. The analytical method used was 1613B. A limited amount of data were qualified as estimated (J) or as non-detect (U).

Samples that contain results between the EDL and the PQL were flagged with "J". Typically, EPA Region 7 reports the associated PQL with a "U" code and is considered a non-detect result.

Specific Comments

The ESAT review notes the following issues identified:

Samples included with Work Order 6361 (9.0°C) were received at temperatures above control limits, however, as noted in previous data packages, to proceed with analyses because temperature is not an issue on any of this material, therefore, no data were qualified.

Matrix spike/matrix spike duplicates (MS/MSDs) are not required, however, nine MS/MSDs were analyzed with the associated data with outliers found (recoveries and/or relative percent differences) which are suspected of being matrix interferences. Since the associated LCS/LCSD results were within control limits, per the case narratives, no data would be qualified.

Several surrogates were diluted out.

As noted in the 12 case narratives, a 1g extraction was performed on several samples due to the high levels of target analytes that may be present.

Several analytes were found below the PQL in several method blanks, however, since associated data were non-detect or greater than ten times the level found, no data were qualified.

Samples SFRA-106 (5X), -109 (5X), -112 (5X), -131 (5X), -132 (5X), -133 (5X), -139 (5X), -140 (5X), -141 (5X), -142 (5X), -143 (10X), -144 (5X), -145 (5X), -146 (5X), -148 (10X), -149 (10X), -157 (5X), and -158 (5X) were analyzed at dilutions and have elevated reporting limits.

1,2,3,6,7,8-HxCDD in samples SFRA-129 and -130 was identified as quantitative interference (Q-code).

Several samples were reanalyzed for 2,3,7,8-TCDF for confirmation.

February 20, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 5842

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 18, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number: 5842

Client Name: Tetra Tech Inc Phone #: 314-517-6798 Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action
 Address: 20 Jamestown Farm Drive
 Collected by: Dave Kinroth Send Results To: dave.kinroth@charter.net

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers	Sample Analysis Requested ⁽⁵⁾										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC		
							1	2	3	4	5	6	7	8	9	10			11	12
<u>SFRA-3</u>	<u>2-13-14</u>	<u>1002</u>	<u>-</u>	<u>-</u>	<u>Soil</u>	<u>1</u>	<u>X</u>													

TAT Requested: Normal: Rush: Specify: 10 days / 2 wks (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
None Expected

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>Dave Kinroth</u>	<u>2-17-14</u>	<u>14:18</u>	<u>Cynde Larkins</u>	<u>18 Feb 14</u>	<u>10:10</u>

CFA PM: Cynde Larkins
 Method of Shipment: FedEx Date Shipped: 2-17-14
 Airbill #: 8750 8908 6375
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. **8290B**, **1668B**) and number of containers provided for each (i.e. **8290B - 3**, **1668B - 1**).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
 Custody Seal Intact?
 YES NO
 Cooler Temp:
5.2°C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

Page 2 of 20

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 5842
Received By: <i>Cynde Larkins</i>	Date/Time Received: 18 Feb 14 1010

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples < 2x background?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: ice bags blue ice dry ice none other (describe) 5.2°C
4	Samples requiring chemical preservation at proper pH?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5	Samples requiring preservation have no residual chlorine?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected: If preservative added, Lot#:
6	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, tests affected:
7	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
8	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
9	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
10	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

Checklist performed by: Initials: *CL* Date: 18 Feb 14

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 5842**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25400
Clean Up Batch Number: 25398
Extraction Batch Number: 25397

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
5842001	SFRA-3
12009915	Method Blank (MB)
12009916	Laboratory Control Sample (LCS)
12009917	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 25400.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 5842 CFA Work Order: 5842

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 03 MAR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5842	Client: TETR001	Project: TETR00114
Lab Sample ID: 5842001	Date Collected: 02/13/2014 10:02	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 02/18/2014 10:10	%Moisture: 9.4
Client ID: SFRA-3		Prep Basis: Dry Weight
Batch ID: 25400	Method: EPA Method 1613B	
Run Date: 02/23/2014 06:53	Analyst: MJC	Instrument: HRP763
Data File: A22FEB14D_2-12		Dilution: 1
Prep Batch: 25397	Prep Method: SW846 3540C	
Prep Date: 20-FEB-14	Aliquot: 15.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.117	pg/g	0.117	0.734
40321-76-4	1,2,3,7,8-PeCDD	U	.304	pg/g	0.304	3.67
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.508	pg/g	0.372	3.67
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.897	pg/g	0.369	3.67
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.977	pg/g	0.397	3.67
35822-46-9	1,2,3,4,6,7,8-HpCDD		41.2	pg/g	0.702	3.67
3268-87-9	1,2,3,4,6,7,8,9-OCDD		853	pg/g	1.56	7.34
51207-31-9	2,3,7,8-TCDF	U	.308	pg/g	0.308	0.734
57117-41-6	1,2,3,7,8-PeCDF	U	.402	pg/g	0.402	3.67
57117-31-4	2,3,4,7,8-PeCDF	J	0.435	pg/g	0.388	3.67
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.530	pg/g	0.405	3.67
57117-44-9	1,2,3,6,7,8-HxCDF	U	.476	pg/g	0.476	3.67
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.574	pg/g	0.430	3.67
72918-21-9	1,2,3,7,8,9-HxCDF	U	.587	pg/g	0.587	3.67
67562-39-4	1,2,3,4,6,7,8-HpCDF		4.32	pg/g	0.119	3.67
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.480	pg/g	0.192	3.67
39001-02-0	1,2,3,4,6,7,8,9-OCDF		9.99	pg/g	0.527	7.34

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		132	147	pg/g	89.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		127	147	pg/g	86.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		135	147	pg/g	92.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		116	147	pg/g	78.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		156	147	pg/g	107	(23%-140%)
13C-OCDD		343	294	pg/g	117	(17%-157%)
13C-2,3,7,8-TCDF		123	147	pg/g	84.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		115	147	pg/g	78.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		119	147	pg/g	80.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		121	147	pg/g	82.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		108	147	pg/g	73.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		116	147	pg/g	79.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		125	147	pg/g	85.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		126	147	pg/g	85.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		142	147	pg/g	96.7	(26%-138%)
37Cl-2,3,7,8-TCDD		12.5	14.7	pg/g	85.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 5842

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12009916	LCS for batch 25397	13C-2,3,7,8-TCDD		87.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		91.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		94.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.7	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		118	(22%-166%)
		13C-OCDD		110	(13%-199%)
		13C-2,3,7,8-TCDF		86.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		81.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		84.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		88.5	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		84.2	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		91.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		93.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		97.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		109	(20%-186%)
		37Cl-2,3,7,8-TCDD		86.3	(31%-191%)
12009917	LCSD for batch 25397	13C-2,3,7,8-TCDD		82.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		82.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		92.7	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		79.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		110	(22%-166%)
		13C-OCDD		104	(13%-199%)
		13C-2,3,7,8-TCDF		80.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		75.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		77.7	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		83.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		75.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		86.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		85.5	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		88.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		97.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		82.7	(31%-191%)
12009915	MB for batch 25397	13C-2,3,7,8-TCDD		80.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		77.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		104	(23%-140%)
		13C-OCDD		101	(17%-157%)
		13C-2,3,7,8-TCDF		78.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		72.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		73.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		81.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		95.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		87.6	(35%-197%)
5842001	SFRA-3	13C-2,3,7,8-TCDD		89.9	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5842

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
5842001	SFRA-3	13C-1,2,3,7,8-PeCDD		86.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		92.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		107	(23%-140%)
		13C-OCDD		117	(17%-157%)
		13C-2,3,7,8-TCDF		84.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		78.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		80.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		96.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		85.2	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5842

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25397

Matrix: SOLID

Lab Sample ID: 12009916

Instrument: HRP763

Analysis Date: 02/22/2014 22:55

Dilution: 1

Analyst: MJC

Prep Batch ID: 25397

Batch ID: 25400

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.1	101	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	101	101	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	99.9	99.9	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	101	101	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	103	103	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	210	105	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.6	98.1	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	104	104	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	103	103	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	99.1	99.1	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	99.5	99.5	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	99.4	99.4	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	102	102	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	101	101	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	103	103	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	194	97	63-170

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5842	Client: TETR001	Project: TETR00114
Lab Sample ID: 12009915		Matrix: SOLID
Client Sample: QC for batch 25397		
Client ID: MB for batch 25397		Prep Basis: As Received
Batch ID: 25400	Method: EPA Method 1613B	
Run Date: 02/23/2014 00:31	Analyst: MJC	Instrument: HRP763
Data File: A22FEB14D_2-4		Dilution: 1
Prep Batch: 25397	Prep Method: SW846 3540C	
Prep Date: 20-FEB-14	Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.155	pg/g	0.155	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.296	pg/g	0.222	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.34	pg/g	0.340	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.356	pg/g	0.356	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.374	pg/g	0.374	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.47	pg/g	0.470	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	1.41	pg/g	1.41	10.0
51207-31-9	2,3,7,8-TCDF	U	.174	pg/g	0.174	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.286	pg/g	0.286	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.268	pg/g	0.268	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.384	pg/g	0.384	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.386	pg/g	0.386	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.398	pg/g	0.398	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.576	pg/g	0.576	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.56	pg/g	0.560	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.926	pg/g	0.926	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.544	pg/g	0.544	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		161	200	pg/g	80.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		155	200	pg/g	77.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		170	200	pg/g	85.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		153	200	pg/g	76.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		209	200	pg/g	104	(23%-140%)
13C-OCDD		404	400	pg/g	101	(17%-157%)
13C-2,3,7,8-TCDF		156	200	pg/g	78.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		145	200	pg/g	72.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		146	200	pg/g	73.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		161	200	pg/g	80.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		142	200	pg/g	70.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		158	200	pg/g	78.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		163	200	pg/g	81.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		170	200	pg/g	84.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		190	200	pg/g	95.1	(26%-138%)
37Cl-2,3,7,8-TCDD		17.5	20.0	pg/g	87.6	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5842	Client: TETR001	Project: TETR00114
Lab Sample ID: 12009916		Matrix: SOLID
Client Sample: QC for batch 25397		
Client ID: LCS for batch 25397		Prep Basis: As Received
Batch ID: 25400	Method: EPA Method 1613B	
Run Date: 02/22/2014 22:55	Analyst: MJC	Instrument: HRP763
Data File: A22FEB14D_2-2		Dilution: 1
Prep Batch: 25397	Prep Method: SW846 3540C	
Prep Date: 20-FEB-14	Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.1	pg/g	0.238	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.398	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		99.9	pg/g	0.880	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		101	pg/g	0.918	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		103	pg/g	0.964	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	0.980	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		210	pg/g	2.78	10.0
51207-31-9	2,3,7,8-TCDF		19.6	pg/g	0.260	1.00
57117-41-6	1,2,3,7,8-PeCDF		104	pg/g	0.604	5.00
57117-31-4	2,3,4,7,8-PeCDF		103	pg/g	0.550	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		99.1	pg/g	1.20	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		99.5	pg/g	1.14	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		99.4	pg/g	1.16	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		102	pg/g	1.69	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.476	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		103	pg/g	0.770	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		194	pg/g	1.75	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		175	200	pg/g	87.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		182	200	pg/g	91.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		189	200	pg/g	94.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		171	200	pg/g	85.7	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		235	200	pg/g	118	(22%-166%)
13C-OCDD		439	400	pg/g	110	(13%-199%)
13C-2,3,7,8-TCDF		172	200	pg/g	86.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		164	200	pg/g	81.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		169	200	pg/g	84.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		177	200	pg/g	88.5	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		168	200	pg/g	84.2	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		182	200	pg/g	91.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		186	200	pg/g	93.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		196	200	pg/g	97.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		218	200	pg/g	109	(20%-186%)
37Cl-2,3,7,8-TCDD		17.3	20.0	pg/g	86.3	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5842	Client: TETR001	Project: TETR00114
Lab Sample ID: 12009917		Matrix: SOLID
Client Sample: QC for batch 25397		
Client ID: LCSD for batch 25397		Prep Basis: As Received
Batch ID: 25400	Method: EPA Method 1613B	
Run Date: 02/22/2014 23:43	Analyst: MJC	Instrument: HRP763
Data File: A22FEB14D_2-3		Dilution: 1
Prep Batch: 25397	Prep Method: SW846 3540C	
Prep Date: 20-FEB-14	Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.9	pg/g	0.254	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.7	pg/g	0.450	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		97.7	pg/g	0.962	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		108	pg/g	0.982	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		109	pg/g	1.04	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.2	pg/g	1.22	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		199	pg/g	2.24	10.0
51207-31-9	2,3,7,8-TCDF		19.2	pg/g	0.206	1.00
57117-41-6	1,2,3,7,8-PeCDF		102	pg/g	0.646	5.00
57117-31-4	2,3,4,7,8-PeCDF		97.7	pg/g	0.604	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		100	pg/g	1.33	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		102	pg/g	1.35	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		101	pg/g	1.26	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		102	pg/g	2.04	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		104	pg/g	1.82	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		102	pg/g	2.96	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		190	pg/g	1.53	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		165	200	pg/g	82.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		165	200	pg/g	82.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		185	200	pg/g	92.7	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	79.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		220	200	pg/g	110	(22%-166%)
13C-OCDD		417	400	pg/g	104	(13%-199%)
13C-2,3,7,8-TCDF		161	200	pg/g	80.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		150	200	pg/g	75.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		155	200	pg/g	77.7	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		168	200	pg/g	83.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		152	200	pg/g	75.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		172	200	pg/g	86.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		171	200	pg/g	85.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		178	200	pg/g	88.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		194	200	pg/g	97.2	(20%-186%)
37Cl-2,3,7,8-TCDD		16.5	20.0	pg/g	82.7	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.



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Cr tkl37.'4236"

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O t0Fcxkf 'Mlptqj '"

Ugci wniGpxkqpo gpvniVgej pqmji lgu.'lpeqtr qtcvgf'"

42'Leo gu'Vqy p'Hcto 'F tlxg'"

Hqtkucpv.'O luuqwk85256'"

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*****Qw'r qnle{ 'ku'q'r tqxkf g'j ki j 's wcnk{ .r gtuqpcrk gf 'cpcn{ vlecnl ugt xlegu'vq'gpcdng' { qw'vq'o ggv' { qw'cpcn{ vlecnlpggf u'qp'vko g'gxgt { 'vko g0 Y g'tvuu'vj cv' { qw'y knlhp' 'gxgt { vj lpi 'lp'qtf gt 'bpf 'vq' { qw'ucvuhcevkp0ki' { qw'j cxg'cp { 's vguvqpu.'r nrcug'f q'pqv'j gukscv'vq'ecni'o g'cv ; 32/9; 7/26430"

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Tetra Tech Inc.

CFA No # 5973

48 HOUR RUSH
Turn Around Please!

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print) Heath Smith, Dave Kinosh	NAME OF SURVEY OR ACTIVITY Schrecker Forest RA	DATE OF COLLECTION DAY: 9 MONTH: 14 YEAR: 14	SHEET 1 of 1
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SAMPLE NUMBER	TYPE OF CONTAINERS			VOA SET (2 VIALS EA)	SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)	
	CUBITAINER	BOTTLE	BOTTLE		BOTTLE	water	soil	sediment		dust
15:45 SFRA-8		1				X				1613B Dioxin/Furans
<p><i>Dave Kinosh</i> 4-9-14</p>										
<p>temp upon rec't = 3.4°C</p>										

DESCRIPTION OF SHIPMENT <input type="checkbox"/> PIECE(S) CONSISTING OF _____ BOX(ES) <input type="checkbox"/> ICE CHEST(S): OTHER _____	MODE OF SHIPMENT <input checked="" type="checkbox"/> COMMERCIAL CARRIER: <i>FedEx</i> <input type="checkbox"/> COURIER <input type="checkbox"/> SAMPLER CONVEYED
--	---

PERSONNEL CUSTODY RECORD				
RELINQUISHED BY (SAMPLER) <i>Dave Kinosh</i>	DATE 4-9-14	TIME 4:15 PM	RECEIVED BY <i>FedEx</i>	REASON FOR CHANGE OF CUSTODY Transport to Lab for Analysis
<input checked="" type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY <i>FedEx</i>	DATE 10 APR 14	TIME 1020	RECEIVED BY <i>Cyrde Sarkis</i>	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR Work Order: 5973

Received By: Cynde Larkins Date/Time Received: 10 APR 14 1020

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) <u>3.4°</u>
4 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
6 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
7 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
8 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: CL Date: 10 APR 14

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 5973**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25621
Clean Up Batch Number: 25618
Extraction Batch Number: 25617

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
5973001	SFRA-8
12010152	Method Blank (MB)
12010153	Laboratory Control Sample (LCS)
12010154	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Due to the high levels of 2378-TCDD present in the sample, the associated clean up standard produced a high recovery. 5973001 (SFRA-8)- Batch 25621.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 25621.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. Per client request, a 5 gram aliquot was used for dry weights and remaining grams were used for extraction. See enclosed logbook page for exact weights.

Sample Dilutions

Sample 5973001 (SFRA-8)- Batch 25621 was diluted due to the presence of overrange target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

VGVT223 "Vgvtc" Vgej "GO" Kpeqtr qtcvgf
ErkpvUF I <7; 95 "EHC" Y qtnlQtf gt <7; 95

The Qualifiers in this report are defined as follows:

, ""C"s wcrk\ "eqpvtqnl'cpcn\ vg'tgeqxtg { 'ku'qwukf g'qh'ur gekhgf "ceegr vcpag'etkgtk
, , ""Cpcn\ vg'ku'c'uwttqi cvg'eqo r qwpf
L""Xcwg'ku'guko cvgf
M""Guko cvgf "O czko wo "Rqukdrg'Eqpepvtcvqp
W""Cpcn\ vg'y cu'cpcn\ | gf 'hqt."dw'pqvf gvevgf "cdqyg'vj g'ur gekhgf "f gvevqp'iko k0

Review/Validation

Ecr g"Hgct"Cpcn\ vccn'tgs wkt gu'cni'cpcn\ vccn'f cvc'vq'dg'xgtkhgf "d { "c"s wcrk\ "f cvc'tgxky gt0
Vj g'fqmgy lpi "f cvc'xcn'f cvqt'xgtkhgf "y g'lpqto cvqp'r tguqpvf "p'vj ku'ecug'pcttcvkg<

Signature:



Name: Erin Suhrie

Date: 15 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5973	Client: TETR001	Project: TETR00114
Lab Sample ID: 5973001	Date Collected: 04/09/2014 15:45	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/10/2014 10:20	%Moisture: 19.6
Client ID: SFRA-8		Prep Basis: Dry Weight
Batch ID: 25621	Method: EPA Method 1613B	
Run Date: 04/14/2014 10:34	Analyst: JTF	Instrument: HRP763
Data File: b14apr14a-3		Dilution: 50
Prep Batch: 25617	Prep Method: SW846 3540C	
Prep Date: 10-APR-14	Prep Aliquot: 15.72 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		10300	pg/g	5.95	39.6
40321-76-4	1,2,3,7,8-PeCDD	U	5.7	pg/g	5.70	198
39227-28-6	1,2,3,4,7,8-HxCDD	J	21.5	pg/g	8.42	198
57653-85-7	1,2,3,6,7,8-HxCDD	J	73.2	pg/g	8.47	198
19408-74-3	1,2,3,7,8,9-HxCDD	J	24.5	pg/g	8.67	198
35822-46-9	1,2,3,4,6,7,8-HpCDD		550	pg/g	17.9	198
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6300	pg/g	91.3	396
51207-31-9	2,3,7,8-TCDF		70.1	pg/g	8.91	39.6
57117-41-6	1,2,3,7,8-PeCDF	U	6.92	pg/g	6.92	198
57117-31-4	2,3,4,7,8-PeCDF	J	6.95	pg/g	6.69	198
70648-26-9	1,2,3,4,7,8-HxCDF	U	11.7	pg/g	11.7	198
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.44	pg/g	5.51	198
60851-34-5	2,3,4,6,7,8-HxCDF	J	10.4	pg/g	6.46	198
72918-21-9	1,2,3,7,8,9-HxCDF	U	8.36	pg/g	8.36	198
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	127	pg/g	4.72	198
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	11.3	pg/g	7.85	198
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	229	pg/g	25.8	396

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		153	158	pg/g	96.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		134	158	pg/g	84.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		129	158	pg/g	81.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		151	158	pg/g	95.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		126	158	pg/g	79.3	(23%-140%)
13C-OCDD		227	317	pg/g	71.7	(17%-157%)
13C-2,3,7,8-TCDF		141	158	pg/g	88.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		136	158	pg/g	85.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		138	158	pg/g	87.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		127	158	pg/g	80.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		130	158	pg/g	81.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		132	158	pg/g	83.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		118	158	pg/g	74.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		121	158	pg/g	76.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		103	158	pg/g	64.8	(26%-138%)
37Cl-2,3,7,8-TCDD		60.4	15.8	pg/g	382 *	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 5973	Client: TETR001	Project: TETR00114
Lab Sample ID: 5973001	Date Collected: 04/09/2014 15:45	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/10/2014 10:20	%Moisture: 19.6
Client ID: SFRA-8		Prep Basis: Dry Weight
Batch ID: 25621	Method: EPA Method 1613B	
Run Date: 04/14/2014 11:49	Analyst: JTF	Instrument: HRP763
Data File: A14APR14A-6		Dilution: 50
Prep Batch: 25617	Prep Method: SW846 3540C	
Prep Date: 10-APR-14	Prep Aliquot: 15.72 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		62.1	pg/g	8.02	39.6

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 5973

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010153	LCS for batch 25617	13C-2,3,7,8-TCDD		76.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		78.6	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		69.3	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		83.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		76.1	(22%-166%)
		13C-OCDD		66.3	(13%-199%)
		13C-2,3,7,8-TCDF		78.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		81.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		83.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		70.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		82.3	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		79.1	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		70.9	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		79.1	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		72.8	(20%-186%)
		37Cl-2,3,7,8-TCDD		95.4	(31%-191%)
12010154	LCSD for batch 25617	13C-2,3,7,8-TCDD		78.0	(20%-175%)
		13C-1,2,3,7,8-PeCDD		83.0	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		67.7	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		79.9	(22%-166%)
		13C-OCDD		66.6	(13%-199%)
		13C-2,3,7,8-TCDF		79.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		89.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		86.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		68.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		84.7	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		80.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		70.0	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		74.6	(20%-186%)
		37Cl-2,3,7,8-TCDD		102	(31%-191%)
12010152	MB for batch 25617	13C-2,3,7,8-TCDD		75.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		81.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		69.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.5	(23%-140%)
		13C-OCDD		58.2	(17%-157%)
		13C-2,3,7,8-TCDF		78.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		68.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		66.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		94.2	(35%-197%)
5973001	SFRA-8	13C-2,3,7,8-TCDD		96.6	D (25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5973

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
5973001	SFRA-8	13C-1,2,3,7,8-PeCDD		84.9 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.3 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		95.1 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.3 D	(23%-140%)
		13C-OCDD		71.7 D	(17%-157%)
		13C-2,3,7,8-TCDF		88.9 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.9 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.0 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.4 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.9 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.7 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		74.8 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.2 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		64.8 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		382 * D	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5973

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25617

Matrix: SOLID

Lab Sample ID: 12010153

Instrument: HRP763

Analysis Date: 04/11/2014 16:16

Dilution: 1

Analyst: JTF

Prep Batch ID: 25617

Batch ID: 25621

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.8	109	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	109	109	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	105	105	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	108	108	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	111	111	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	105	105	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	203	101	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.2	96.2	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	104	104	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	106	106	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	111	111	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	114	114	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	111	111	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	107	107	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	102	102	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	99.6	99.6	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	226	113	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5973

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25617

Matrix: SOLID

Lab Sample ID: 12010154

Instrument: HRP763

Analysis Date: 04/11/2014 17:03

Dilution: 1

Analyst: JTF

Prep Batch ID: 25617

Batch ID: 25621

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.7	109	67-158	0.303	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	107	107	70-142	1.52	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	104	104	70-164	1.36	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	107	107	76-134	0.974	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	115	115	64-162	3.46	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	99.2	99.2	70-140	5.70	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	211	106	78-144	4.07	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	20.1	101	75-158	4.38	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	105	105	80-134	0.877	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	108	108	68-160	2.67	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	116	116	72-134	4.45	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	106	106	84-130	7.50	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	108	108	70-156	2.30	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	111	111	78-130	3.03	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	103	103	82-122	0.623	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	102	102	78-138	2.00	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	239	120	63-170	5.65	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 5973
Client ID: MB for batch 25617
Lab Sample ID: 12010152
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 10-APR-14

Matrix: SOLID
Data File: b11apr14a-6
Analyzed: 04/11/14 17:51

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25617	12010153	b11apr14a-4	04/11/14	1616
02 LCSD for batch 25617	12010154	b11apr14a-5	04/11/14	1703
03 SFRA-8	5973001	b14apr14a-3	04/14/14	1034
04 SFRA-8	5973001	A14APR14A-6	04/14/14	1149

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5973	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010152		Matrix: SOLID
Client Sample: QC for batch 25617		
Client ID: MB for batch 25617		Prep Basis: As Received
Batch ID: 25621	Method: EPA Method 1613B	
Run Date: 04/11/2014 17:51	Analyst: JTF	Instrument: HRP763
Data File: b11apr14a-6		Dilution: 1
Prep Batch: 25617	Prep Method: SW846 3540C	
Prep Date: 10-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.342	pg/g	0.342	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.4	pg/g	0.400	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.462	pg/g	0.462	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.432	pg/g	0.432	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.458	pg/g	0.458	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.856	pg/g	0.856	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	1.16	pg/g	1.16	10.0
51207-31-9	2,3,7,8-TCDF	U	.34	pg/g	0.340	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.216	pg/g	0.212	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.21	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.276	pg/g	0.276	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.268	pg/g	0.268	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.288	pg/g	0.288	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.514	pg/g	0.514	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.27	pg/g	0.270	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.5	pg/g	0.500	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.66	pg/g	1.66	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		151	200	pg/g	75.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		163	200	pg/g	81.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		138	200	pg/g	69.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		159	200	pg/g	79.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		153	200	pg/g	76.5	(23%-140%)
13C-OCDD		233	400	pg/g	58.2	(17%-157%)
13C-2,3,7,8-TCDF		157	200	pg/g	78.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		169	200	pg/g	84.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		166	200	pg/g	82.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		136	200	pg/g	68.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		167	200	pg/g	83.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		160	200	pg/g	79.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		133	200	pg/g	66.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		157	200	pg/g	78.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		133	200	pg/g	66.6	(26%-138%)
37Cl-2,3,7,8-TCDD		18.8	20.0	pg/g	94.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5973	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010153		Matrix: SOLID
Client Sample: QC for batch 25617		
Client ID: LCS for batch 25617		Prep Basis: As Received
Batch ID: 25621	Method: EPA Method 1613B	
Run Date: 04/11/2014 16:16	Analyst: JTF	Instrument: HRP763
Data File: b11apr14a-4		Dilution: 1
Prep Batch: 25617	Prep Method: SW846 3540C	
Prep Date: 10-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.8	pg/g	0.456	1.00
40321-76-4	1,2,3,7,8-PeCDD		109	pg/g	0.762	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		105	pg/g	1.59	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		108	pg/g	1.54	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		111	pg/g	1.60	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		105	pg/g	2.96	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		203	pg/g	7.66	10.0
51207-31-9	2,3,7,8-TCDF		19.2	pg/g	0.468	1.00
57117-41-6	1,2,3,7,8-PeCDF		104	pg/g	1.16	5.00
57117-31-4	2,3,4,7,8-PeCDF		106	pg/g	1.13	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		111	pg/g	1.44	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		114	pg/g	1.35	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		111	pg/g	1.43	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		107	pg/g	2.38	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		102	pg/g	1.61	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.6	pg/g	2.98	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		226	pg/g	5.54	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		153	200	pg/g	76.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		157	200	pg/g	78.6	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		139	200	pg/g	69.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		167	200	pg/g	83.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		152	200	pg/g	76.1	(22%-166%)
13C-OCDD		265	400	pg/g	66.3	(13%-199%)
13C-2,3,7,8-TCDF		157	200	pg/g	78.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		163	200	pg/g	81.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		167	200	pg/g	83.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		140	200	pg/g	70.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		165	200	pg/g	82.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		158	200	pg/g	79.1	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		142	200	pg/g	70.9	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		158	200	pg/g	79.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		146	200	pg/g	72.8	(20%-186%)
37Cl-2,3,7,8-TCDD		19.1	20.0	pg/g	95.4	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5973	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010154		Matrix: SOLID
Client Sample: QC for batch 25617		
Client ID: LCSD for batch 25617		Prep Basis: As Received
Batch ID: 25621	Method: EPA Method 1613B	
Run Date: 04/11/2014 17:03	Analyst: JTF	Instrument: HRP763
Data File: b11apr14a-5		Dilution: 1
Prep Batch: 25617	Prep Method: SW846 3540C	
Prep Date: 10-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.7	pg/g	0.388	1.00
40321-76-4	1,2,3,7,8-PeCDD		107	pg/g	0.860	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		104	pg/g	1.26	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		107	pg/g	1.22	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		115	pg/g	1.27	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.2	pg/g	1.99	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		211	pg/g	6.10	10.0
51207-31-9	2,3,7,8-TCDF		20.1	pg/g	0.450	1.00
57117-41-6	1,2,3,7,8-PeCDF		105	pg/g	0.798	5.00
57117-31-4	2,3,4,7,8-PeCDF		108	pg/g	0.778	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		116	pg/g	1.40	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		106	pg/g	1.34	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		108	pg/g	1.32	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		111	pg/g	2.40	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		103	pg/g	1.73	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		102	pg/g	2.74	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		239	pg/g	8.78	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		156	200	pg/g	78.0	(20%-175%)
13C-1,2,3,7,8-PeCDD		166	200	pg/g	83.0	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		135	200	pg/g	67.7	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		171	200	pg/g	85.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		160	200	pg/g	79.9	(22%-166%)
13C-OCDD		266	400	pg/g	66.6	(13%-199%)
13C-2,3,7,8-TCDF		158	200	pg/g	79.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		178	200	pg/g	89.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		173	200	pg/g	86.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		138	200	pg/g	68.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		169	200	pg/g	84.7	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		161	200	pg/g	80.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		140	200	pg/g	70.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		158	200	pg/g	78.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		149	200	pg/g	74.6	(20%-186%)
37Cl-2,3,7,8-TCDD		20.4	20.0	pg/g	102	(31%-191%)

Comments:

April 14, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 5968

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 09, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number (1):
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number: 5968

Client Name: Tetra Tech Inc. Phone #: 314 517 6798

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action
 Address: 20 Tamestown Farm Drive
 Collected by: Dave Kinath Send Results To: dave.kinath@charter.net

Total number of containers	4C													← Preservative Type (6)
----------------------------	----	--	--	--	--	--	--	--	--	--	--	--	--	-------------------------

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers
SFRA-5	4-8-14	14:25	-	-	soil	1 IX
-6		15:39	-	-		
-7		16:07	-	-		

Comments
 Note: extra sample is required for sample specific QC
 Each Sample is ~20gms soil/sample use 5g for dry wt and rest for extraction & analysis

END OF SHIPMENT
 ACK 4-8-14

TAT Requested: Normal: Rush: **X** Specify: 72 hours (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Possible Dioxins/Furans Compounds

Sample Collection Time Zone
 Eastern Pacific
 Central Other

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
Dave Kinath	4-8-14	17:06	Cynde Jenkins	09 APR 14	09:30

Sample Shipping and Delivery Details

CFA PM: _____
 Method of Shipment: _____ Date Shipped: _____
 Airbill #: _____
 Airbill #: _____

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
 3.9 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 5968
Received By: Cynde Larkins	Date/Time Received: 09 APR 14 0930

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		<input checked="" type="checkbox"/>	
Samples < 2x background?		<input checked="" type="checkbox"/>	

* Notify RSO of any responses in this column immediately.

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 3.9°
4	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
6	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
7	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
8	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: CL Date: _____

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 5968**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25608
Clean Up Batch Number: 25599
Extraction Batch Number: 25598

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
5968001	SFRA-5
5968002	SFRA-6
5968003	SFRA-7
12010139	Method Blank (MB)
12010140	Laboratory Control Sample (LCS)
12010141	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 25608.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. Per client request, a 5 gram aliquot was used for dry weights and remaining grams were used for extraction. See enclosed logbook page for exact weights.

Sample Dilutions

Sample 5968003 (SFRA-7)- Batch 25608 was diluted due to the presence of overrange target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 5968 CFA Work Order: 5968


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- E Value is estimated - Concentration of the target analyte exceeds the instrument calibration range
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 14 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 5968001	Date Collected: 04/08/2014 14:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/09/2014 09:30	%Moisture: 21.6
Client ID: SFRA-5		Prep Basis: Dry Weight
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/11/2014 16:10	Analyst: JTF	Instrument: HRP750
Data File: A11APR14A_2-9		Dilution: 1
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 19.86 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF	J	0.419	pg/g	0.401	0.642

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- E** Value is estimated - Concentration of the target analyte exceeds the instrument calibration range
- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 5968001	Date Collected: 04/08/2014 14:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/09/2014 09:30	%Moisture: 21.6
Client ID: SFRA-5		Prep Basis: Dry Weight
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/10/2014 23:47	Analyst: JTF	Instrument: HRP763
Data File: b10apr14a_2-10		Dilution: 1
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 19.86 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		8.06	pg/g	0.281	0.642
40321-76-4	1,2,3,7,8-PeCDD	U	.682	pg/g	0.682	3.21
39227-28-6	1,2,3,4,7,8-HxCDD	J	1.84	pg/g	0.583	3.21
57653-85-7	1,2,3,6,7,8-HxCDD	U	4.24	pg/g	4.24	3.21
19408-74-3	1,2,3,7,8,9-HxCDD	J	3.02	pg/g	0.611	3.21
35822-46-9	1,2,3,4,6,7,8-HpCDD		155	pg/g	1.76	3.21
3268-87-9	1,2,3,4,6,7,8,9-OCDD	E	4960	pg/g	4.20	6.42
51207-31-9	2,3,7,8-TCDF		0.677	pg/g	0.660	0.642
57117-41-6	1,2,3,7,8-PeCDF	J	3.06	pg/g	0.605	3.21
57117-31-4	2,3,4,7,8-PeCDF	J	1.15	pg/g	0.622	3.21
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.04	pg/g	0.438	3.21
57117-44-9	1,2,3,6,7,8-HxCDF	U	.965	pg/g	0.965	3.21
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.03	pg/g	0.448	3.21
72918-21-9	1,2,3,7,8,9-HxCDF	U	.678	pg/g	0.678	3.21
67562-39-4	1,2,3,4,6,7,8-HpCDF		24.7	pg/g	0.284	3.21
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	1.52	pg/g	0.491	3.21
39001-02-0	1,2,3,4,6,7,8,9-OCDF		61.3	pg/g	0.840	6.42

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		109	128	pg/g	84.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		115	128	pg/g	89.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		105	128	pg/g	81.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		102	128	pg/g	79.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		116	128	pg/g	90.1	(23%-140%)
13C-OCDD		265	257	pg/g	103	(17%-157%)
13C-2,3,7,8-TCDF		107	128	pg/g	83.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		115	128	pg/g	89.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		115	128	pg/g	89.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		96.4	128	pg/g	75.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		94.4	128	pg/g	73.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		99.5	128	pg/g	77.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		89.6	128	pg/g	69.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		108	128	pg/g	83.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		106	128	pg/g	82.4	(26%-138%)
37Cl-2,3,7,8-TCDD		13.3	12.8	pg/g	103	(35%-197%)

Comments:

- E** Value is estimated - Concentration of the target analyte exceeds the instrument calibration range
- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 5968002	Date Collected: 04/08/2014 15:39	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/09/2014 09:30	%Moisture: 19.8
Client ID: SFRA-6		Prep Basis: Dry Weight
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/11/2014 00:34	Analyst: JTF	Instrument: HRP763
Data File: b10apr14a_2-11		Dilution: 1
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 16.06 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3.12	pg/g	0.356	0.776
40321-76-4	1,2,3,7,8-PeCDD	U	.391	pg/g	0.391	3.88
39227-28-6	1,2,3,4,7,8-HxCDD	U	.716	pg/g	0.716	3.88
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.961	pg/g	0.602	3.88
19408-74-3	1,2,3,7,8,9-HxCDD	J	1.12	pg/g	0.573	3.88
35822-46-9	1,2,3,4,6,7,8-HpCDD		51.1	pg/g	1.11	3.88
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1800	pg/g	4.57	7.76
51207-31-9	2,3,7,8-TCDF	U	.349	pg/g	0.349	0.776
57117-41-6	1,2,3,7,8-PeCDF	U	.309	pg/g	0.309	3.88
57117-31-4	2,3,4,7,8-PeCDF	U	.289	pg/g	0.289	3.88
70648-26-9	1,2,3,4,7,8-HxCDF	U	.23	pg/g	0.230	3.88
57117-44-9	1,2,3,6,7,8-HxCDF	U	.214	pg/g	0.214	3.88
60851-34-5	2,3,4,6,7,8-HxCDF	U	.224	pg/g	0.224	3.88
72918-21-9	1,2,3,7,8,9-HxCDF	U	.365	pg/g	0.365	3.88
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	1.76	pg/g	0.188	3.88
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.281	pg/g	0.281	3.88
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	3.04	pg/g	0.652	7.76

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		132	155	pg/g	84.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		147	155	pg/g	94.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		126	155	pg/g	81.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		125	155	pg/g	80.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		140	155	pg/g	90.0	(23%-140%)
13C-OCDD		292	311	pg/g	93.9	(17%-157%)
13C-2,3,7,8-TCDF		132	155	pg/g	85.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		143	155	pg/g	92.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		146	155	pg/g	94.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		119	155	pg/g	76.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		120	155	pg/g	77.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		126	155	pg/g	81.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		110	155	pg/g	71.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		135	155	pg/g	87.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		132	155	pg/g	85.0	(26%-138%)
37Cl-2,3,7,8-TCDD		15.5	15.5	pg/g	100	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 5968003	Date Collected: 04/08/2014 16:07	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/09/2014 09:30	%Moisture: 20.6
Client ID: SFRA-7		Prep Basis: Dry Weight
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/14/2014 10:32	Analyst: JTF	Instrument: HRP750
Data File: A14APR14A-4		Dilution: 10
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 15.71 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF	J	7.29	pg/g	2.04	8.02

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 5968003	Date Collected: 04/08/2014 16:07	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/09/2014 09:30	%Moisture: 20.6
Client ID: SFRA-7		Prep Basis: Dry Weight
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/11/2014 15:20	Analyst: JTF	Instrument: HRP763
Data File: b11apr14a-3		Dilution: 10
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 15.71 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1080	pg/g	4.67	8.02
40321-76-4	1,2,3,7,8-PeCDD	U	3.91	pg/g	3.91	40.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	7.3	pg/g	7.30	40.1
57653-85-7	1,2,3,6,7,8-HxCDD	U	6.13	pg/g	6.13	40.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	6.06	pg/g	6.06	40.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		114	pg/g	17.6	40.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1870	pg/g	68.5	80.2
51207-31-9	2,3,7,8-TCDF	J	6.08	pg/g	5.37	8.02
57117-41-6	1,2,3,7,8-PeCDF	J	8.18	pg/g	3.19	40.1
57117-31-4	2,3,4,7,8-PeCDF	U	2.97	pg/g	2.97	40.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.13	pg/g	3.13	40.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.89	pg/g	2.89	40.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.43	pg/g	3.43	40.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.71	pg/g	5.71	40.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	20.1	pg/g	5.13	40.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	11.2	pg/g	11.2	40.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	40.7	pg/g	16.2	80.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		138	160	pg/g	85.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		123	160	pg/g	76.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		107	160	pg/g	66.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		173	160	pg/g	108	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		125	160	pg/g	77.8	(23%-140%)
13C-OCDD		252	321	pg/g	78.5	(17%-157%)
13C-2,3,7,8-TCDF		132	160	pg/g	82.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		130	160	pg/g	81.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		140	160	pg/g	87.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		118	160	pg/g	73.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		170	160	pg/g	106	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		147	160	pg/g	91.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		96.6	160	pg/g	60.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		136	160	pg/g	84.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		122	160	pg/g	75.9	(26%-138%)
37Cl-2,3,7,8-TCDD		20.3	16.0	pg/g	127	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 5968

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010140	LCS for batch 25598	13C-2,3,7,8-TCDD		76.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		85.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		69.1	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		81.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		76.7	(22%-166%)
		13C-OCDD		72.2	(13%-199%)
		13C-2,3,7,8-TCDF		79.4	(22%-152%)
		13C-1,2,3,7,8-PeCDF		87.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		84.6	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		66.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		75.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		75.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		65.9	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		76.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		74.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		97.6	(31%-191%)
		12010141	LCSD for batch 25598	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				84.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD				82.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD				88.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD				92.6	(22%-166%)
13C-OCDD				94.9	(13%-199%)
13C-2,3,7,8-TCDF				84.5	(22%-152%)
13C-1,2,3,7,8-PeCDF				86.5	(21%-192%)
13C-2,3,4,7,8-PeCDF				85.6	(13%-328%)
13C-1,2,3,4,7,8-HxCDF				81.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF				86.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF				85.1	(22%-176%)
13C-1,2,3,7,8,9-HxCDF				76.3	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF				91.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF				88.6	(20%-186%)
37Cl-2,3,7,8-TCDD				103	(31%-191%)
12010139	MB for batch 25598			13C-2,3,7,8-TCDD	
		13C-1,2,3,7,8-PeCDD		80.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		76.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.8	(23%-140%)
		13C-OCDD		82.0	(17%-157%)
		13C-2,3,7,8-TCDF		81.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		83.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		82.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		94.9	(35%-197%)
		5968001	SFRA-5	13C-2,3,7,8-TCDD	

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 5968

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
5968001	SFRA-5	13C-1,2,3,7,8-PeCDD		89.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.1	(23%-140%)
		13C-OCDD		103	(17%-157%)
		13C-2,3,7,8-TCDF		83.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		75.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		82.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		103	(35%-197%)
5968002	SFRA-6	13C-2,3,7,8-TCDD		84.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		94.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.0	(23%-140%)
		13C-OCDD		93.9	(17%-157%)
		13C-2,3,7,8-TCDF		85.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		71.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		87.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.0	(26%-138%)
37Cl-2,3,7,8-TCDD		100	(35%-197%)		
5968003	SFRA-7	13C-2,3,7,8-TCDD		85.8	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		76.7	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		66.7	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		108	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		77.8	D (23%-140%)
		13C-OCDD		78.5	D (17%-157%)
		13C-2,3,7,8-TCDF		82.5	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		81.2	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		87.3	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.8	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		106	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		91.9	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		60.2	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.7	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		75.9	D (26%-138%)
37Cl-2,3,7,8-TCDD		127	D (35%-197%)		

* Recovery outside Acceptance Limits

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5968

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits
Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5968

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25598

Matrix: SOLID

Lab Sample ID: 12010140

Instrument: HRP763

Analysis Date: 04/10/2014 16:38

Dilution: 1

Analyst: JTF

Prep Batch ID: 25598

Batch ID: 25608

CAS No.	Parmname	Amount	Spike	Recovery	Acceptance
		Added	Conc.	%	Limits
		pg/g	pg/g		
1746-01-6	LCS	2,3,7,8-TCDD	20.0	20.3	101 67-158
40321-76-4	LCS	1,2,3,7,8-PeCDD	100	101	101 70-142
39227-28-6	LCS	1,2,3,4,7,8-HxCDD	100	95.3	95.3 70-164
57653-85-7	LCS	1,2,3,6,7,8-HxCDD	100	98.8	98.8 76-134
19408-74-3	LCS	1,2,3,7,8,9-HxCDD	100	99.5	99.5 64-162
35822-46-9	LCS	1,2,3,4,6,7,8-HpCDD	100	104	104 70-140
3268-87-9	LCS	1,2,3,4,6,7,8,9-OCDD	200	204	102 78-144
51207-31-9	LCS	2,3,7,8-TCDF	20.0	17.7	88.7 75-158
57117-41-6	LCS	1,2,3,7,8-PeCDF	100	97.3	97.3 80-134
57117-31-4	LCS	2,3,4,7,8-PeCDF	100	101	101 68-160
70648-26-9	LCS	1,2,3,4,7,8-HxCDF	100	102	102 72-134
57117-44-9	LCS	1,2,3,6,7,8-HxCDF	100	103	103 84-130
60851-34-5	LCS	2,3,4,6,7,8-HxCDF	100	101	101 70-156
72918-21-9	LCS	1,2,3,7,8,9-HxCDF	100	109	109 78-130
67562-39-4	LCS	1,2,3,4,6,7,8-HpCDF	100	101	101 82-122
55673-89-7	LCS	1,2,3,4,7,8,9-HpCDF	100	98.5	98.5 78-138
39001-02-0	LCS	1,2,3,4,6,7,8,9-OCDF	200	215	107 63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5968

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25598

Matrix: SOLID

Lab Sample ID: 12010141

Instrument: HRP763

Analysis Date: 04/10/2014 17:25

Dilution: 1

Analyst: JTF

Prep Batch ID: 25598

Batch ID: 25608

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.1	105	67-158	3.92	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	107	107	70-142	5.37	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	100	100	70-164	5.10	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	110	110	76-134	10.8	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	106	106	64-162	6.58	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	98.3	98.3	70-140	5.54	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	195	97.6	78-144	4.41	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.3	96.6	75-158	8.53	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	101	101	80-134	3.29	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	102	102	68-160	0.875	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	101	101	72-134	1.09	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	102	102	84-130	1.22	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	106	106	70-156	5.27	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	113	113	78-130	3.67	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	101	101	82-122	0.0889	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	101	101	78-138	2.76	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	207	104	63-170	3.56	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 5968
Client ID: MB for batch 25598
Lab Sample ID: 12010139
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 09-APR-14

Matrix: SOLID
Data File: b10apr14a_2-3
Analyzed: 04/10/14 18:12

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25598	12010140	b10apr14a_2-1	04/10/14	1638
02 LCSD for batch 25598	12010141	b10apr14a_2-2	04/10/14	1725
03 SFRA-5	5968001	b10apr14a_2-10	04/10/14	2347
04 SFRA-6	5968002	b10apr14a_2-11	04/11/14	0034
05 SFRA-7	5968003	b11apr14a-3	04/11/14	1520
06 SFRA-5	5968001	A11APR14A_2-9	04/11/14	1610
07 SFRA-7	5968003	A14APR14A-4	04/14/14	1032

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010139		Matrix: SOLID
Client Sample: QC for batch 25598		
Client ID: MB for batch 25598		Prep Basis: As Received
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/10/2014 18:12	Analyst: JTF	Instrument: HRP763
Data File: b10apr14a_2-3		Dilution: 1
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.332	pg/g	0.332	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.284	pg/g	0.284	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.266	pg/g	0.266	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.264	pg/g	0.264	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.272	pg/g	0.272	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.484	pg/g	0.484	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.74	pg/g	0.740	10.0
51207-31-9	2,3,7,8-TCDF	U	.274	pg/g	0.274	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.21	pg/g	0.210	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.214	pg/g	0.214	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.292	pg/g	0.292	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.276	pg/g	0.276	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.284	pg/g	0.284	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.464	pg/g	0.464	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.202	pg/g	0.202	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.332	pg/g	0.332	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.85	pg/g	0.850	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		159	200	pg/g	79.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		161	200	pg/g	80.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		153	200	pg/g	76.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		170	200	pg/g	85.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		176	200	pg/g	87.8	(23%-140%)
13C-OCDD		328	400	pg/g	82.0	(17%-157%)
13C-2,3,7,8-TCDF		163	200	pg/g	81.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		171	200	pg/g	85.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		167	200	pg/g	83.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		146	200	pg/g	73.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		162	200	pg/g	80.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		165	200	pg/g	82.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		139	200	pg/g	69.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		167	200	pg/g	83.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		165	200	pg/g	82.5	(26%-138%)
37Cl-2,3,7,8-TCDD		19.0	20.0	pg/g	94.9	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010140		Matrix: SOLID
Client Sample: QC for batch 25598		
Client ID: LCS for batch 25598		Prep Basis: As Received
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/10/2014 16:38	Analyst: JTF	Instrument: HRP763
Data File: b10apr14a_2-1		Dilution: 1
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.252	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.608	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.3	pg/g	0.738	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.8	pg/g	0.694	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		99.5	pg/g	0.732	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		104	pg/g	1.23	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		204	pg/g	3.42	10.0
51207-31-9	2,3,7,8-TCDF		17.7	pg/g	0.254	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.3	pg/g	0.750	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.756	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		102	pg/g	0.990	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		103	pg/g	0.938	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		101	pg/g	0.940	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		109	pg/g	1.62	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.808	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		98.5	pg/g	1.43	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		215	pg/g	3.52	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		153	200	pg/g	76.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		171	200	pg/g	85.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		138	200	pg/g	69.1	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		163	200	pg/g	81.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		153	200	pg/g	76.7	(22%-166%)
13C-OCDD		289	400	pg/g	72.2	(13%-199%)
13C-2,3,7,8-TCDF		159	200	pg/g	79.4	(22%-152%)
13C-1,2,3,7,8-PeCDF		174	200	pg/g	87.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		169	200	pg/g	84.6	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		134	200	pg/g	66.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		150	200	pg/g	75.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		151	200	pg/g	75.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		132	200	pg/g	65.9	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		154	200	pg/g	76.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		149	200	pg/g	74.5	(20%-186%)
37Cl-2,3,7,8-TCDD		19.5	20.0	pg/g	97.6	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5968	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010141		Matrix: SOLID
Client Sample: QC for batch 25598		
Client ID: LCSD for batch 25598		Prep Basis: As Received
Batch ID: 25608	Method: EPA Method 1613B	
Run Date: 04/10/2014 17:25	Analyst: JTF	Instrument: HRP763
Data File: b10apr14a_2-2		Dilution: 1
Prep Batch: 25598	Prep Method: SW846 3540C	
Prep Date: 09-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.1	pg/g	0.276	1.00
40321-76-4	1,2,3,7,8-PeCDD		107	pg/g	0.614	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		100	pg/g	1.29	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		110	pg/g	1.35	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		106	pg/g	1.36	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		98.3	pg/g	1.14	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		195	pg/g	3.18	10.0
51207-31-9	2,3,7,8-TCDF		19.3	pg/g	0.384	1.00
57117-41-6	1,2,3,7,8-PeCDF		101	pg/g	0.788	5.00
57117-31-4	2,3,4,7,8-PeCDF		102	pg/g	0.744	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		101	pg/g	1.00	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		102	pg/g	0.984	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		106	pg/g	1.08	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		113	pg/g	1.66	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	1.18	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		101	pg/g	1.82	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		207	pg/g	3.76	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		161	200	pg/g	80.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		170	200	pg/g	84.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		165	200	pg/g	82.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		176	200	pg/g	88.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		185	200	pg/g	92.6	(22%-166%)
13C-OCDD		380	400	pg/g	94.9	(13%-199%)
13C-2,3,7,8-TCDF		169	200	pg/g	84.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		173	200	pg/g	86.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		171	200	pg/g	85.6	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		162	200	pg/g	81.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		173	200	pg/g	86.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		170	200	pg/g	85.1	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		153	200	pg/g	76.3	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		183	200	pg/g	91.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		177	200	pg/g	88.6	(20%-186%)
37Cl-2,3,7,8-TCDD		20.6	20.0	pg/g	103	(31%-191%)

Comments:

April 16, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 5983

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 11, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Enclosures

Tetra Tech Inc.

CFA WO# 5983

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

72 HOUR RUSH
Turn around please!

ACTIVITY LEADER(Print) <i>Heath Smith, Dave Kinosh</i>	NAME OF SURVEY OR ACTIVITY <i>Streckler Forest RA</i>	DATE OF COLLECTION DAY: <i>10</i> MONTH: <i>4</i> YEAR: <i>14</i>	SHEET 1 of 1
---	--	--	-----------------

SAMPLE NUMBER	TYPE OF CONTAINERS				VOA SET (2 VIALS EA)	SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)	
	CUBITAINER	BOTTLE	BOTTLE	BOTTLE		water	soil	sediment	dust		other
<i>16:00 SFRA-9</i>		<i>402</i>									<i>1613 B Dioxin/Furans 20g sample each - use 15g for extraction & 5g for dry wt.</i>
<i>16:20 ↓ -10</i>											
<i>16:25 ↓ -11</i>											
<i>Temp upon receipt = 3.6°C</i>											

DESCRIPTION OF SHIPMENT <i>3</i> PIECE(S) CONSISTING OF _____ BOX(ES) <i>1</i> ICE CHEST(S): OTHER _____	MODE OF SHIPMENT <input checked="" type="checkbox"/> COMMERCIAL CARRIER: <i>Fedex</i> <input type="checkbox"/> COURIER <input type="checkbox"/> SAMPLER CONVEYED <i>8686 5747 4327</i> (SHIPPING DOCUMENT NUMBER)
--	--

PERSONNEL CUSTODY RECORD				
RELINQUISHED BY (SAMPLER) <i>Dave Kinosh</i>	DATE <i>4-10-14</i>	TIME	RECEIVED BY <i>Cynde Larkins</i>	REASON FOR CHANGE OF CUSTODY <i>Transport to Lab for Analysis</i>
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 5983
Received By: Cynde Larkins	Date/Time Received: 11 APR 14 1020

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe)
4	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
6	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
7	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
8	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CL** Date: **11 APR 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 5983**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25651
Clean Up Batch Number: 25650
Extraction Batch Number: 25649

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
5983001	SFRA-9
5983002	SFRA-10
5983003	SFRA-11
12010170	Method Blank (MB)
12010171	Laboratory Control Sample (LCS)
12010172	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Samples 5983001 (SFRA-9) and 5983003 (SFRA-11)- Batch 25651 were diluted due to the presence of overrange target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 5983 CFA Work Order: 5983

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 16 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 5983001	Date Collected: 04/10/2014 16:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/11/2014 10:20	%Moisture: 18.3
Client ID: SFRA-9		Prep Basis: Dry Weight
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/16/2014 09:54	Analyst: JTF	Instrument: HRP750
Data File: A16APR14A-4		Dilution: 20
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 15.92 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		23.9	pg/g	3.46	15.4

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 5983001	Date Collected: 04/10/2014 16:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/11/2014 10:20	%Moisture: 18.3
Client ID: SFRA-9		Prep Basis: Dry Weight
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/15/2014 20:39	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_2-6		Dilution: 20
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 15.92 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3580	pg/g	4.52	15.4
40321-76-4	1,2,3,7,8-PeCDD	U	3.12	pg/g	3.12	76.9
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.89	pg/g	5.89	76.9
57653-85-7	1,2,3,6,7,8-HxCDD	J	18.3	pg/g	6.15	76.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	6.27	pg/g	6.21	76.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		311	pg/g	13.7	76.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5580	pg/g	57.2	154
51207-31-9	2,3,7,8-TCDF		18.4	pg/g	7.10	15.4
57117-41-6	1,2,3,7,8-PeCDF	J	3.33	pg/g	3.15	76.9
57117-31-4	2,3,4,7,8-PeCDF	U	2.98	pg/g	2.98	76.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	4.89	pg/g	3.61	76.9
57117-44-9	1,2,3,6,7,8-HxCDF	U	3.12	pg/g	3.12	76.9
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.23	pg/g	3.23	76.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.34	pg/g	5.34	76.9
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	53.0	pg/g	5.60	76.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	9.33	pg/g	9.33	76.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	131	pg/g	11.3	154

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		142	154	pg/g	92.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		129	154	pg/g	84.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		133	154	pg/g	86.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		138	154	pg/g	89.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		126	154	pg/g	82.2	(23%-140%)
13C-OCDD		266	308	pg/g	86.6	(17%-157%)
13C-2,3,7,8-TCDF		134	154	pg/g	87.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		125	154	pg/g	81.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		126	154	pg/g	82.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		117	154	pg/g	76.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		140	154	pg/g	91.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		120	154	pg/g	78.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		95.3	154	pg/g	62.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		124	154	pg/g	80.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		109	154	pg/g	70.7	(26%-138%)
37Cl-2,3,7,8-TCDD		32.7	15.4	pg/g	213 *	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 5983002	Date Collected: 04/10/2014 16:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/11/2014 10:20	%Moisture: 18.6
Client ID: SFRA-10		Prep Basis: Dry Weight
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/15/2014 19:51	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_2-5		Dilution: 1
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 17.54 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		5.46	pg/g	0.122	0.700
40321-76-4	1,2,3,7,8-PeCDD	U	.2	pg/g	0.200	3.50
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.514	pg/g	0.318	3.50
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.745	pg/g	0.325	3.50
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.902	pg/g	0.331	3.50
35822-46-9	1,2,3,4,6,7,8-HpCDD		52.5	pg/g	0.944	3.50
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2230	pg/g	3.52	7.00
51207-31-9	2,3,7,8-TCDF	U	.131	pg/g	0.131	0.700
57117-41-6	1,2,3,7,8-PeCDF	U	.0974	pg/g	0.0974	3.50
57117-31-4	2,3,4,7,8-PeCDF	U	.0937	pg/g	0.0937	3.50
70648-26-9	1,2,3,4,7,8-HxCDF	U	.0716	pg/g	0.0716	3.50
57117-44-9	1,2,3,6,7,8-HxCDF	U	.0731	pg/g	0.0731	3.50
60851-34-5	2,3,4,6,7,8-HxCDF	U	.0731	pg/g	0.0731	3.50
72918-21-9	1,2,3,7,8,9-HxCDF	U	.115	pg/g	0.115	3.50
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.273	pg/g	0.273	3.50
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.135	pg/g	0.135	3.50
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.761	pg/g	0.453	7.00

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		106	140	pg/g	75.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		108	140	pg/g	76.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		95.6	140	pg/g	68.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		105	140	pg/g	75.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		108	140	pg/g	76.9	(23%-140%)
13C-OCDD		243	280	pg/g	86.7	(17%-157%)
13C-2,3,7,8-TCDF		112	140	pg/g	79.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		113	140	pg/g	80.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		111	140	pg/g	79.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		90.7	140	pg/g	64.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		99.0	140	pg/g	70.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		99.7	140	pg/g	71.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		92.5	140	pg/g	66.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		105	140	pg/g	74.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		105	140	pg/g	74.9	(26%-138%)
37Cl-2,3,7,8-TCDD		13.0	14.0	pg/g	92.5	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 5983003	Date Collected: 04/10/2014 16:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/11/2014 10:20	%Moisture: 17.3
Client ID: SFRA-11		Prep Basis: Dry Weight
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/16/2014 10:14	Analyst: JTF	Instrument: HRP750
Data File: A16APR14A-5		Dilution: 50
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 15.81 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF	J	36.0	pg/g	6.33	38.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 5983003	Date Collected: 04/10/2014 16:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/11/2014 10:20	%Moisture: 17.3
Client ID: SFRA-11		Prep Basis: Dry Weight
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/15/2014 21:27	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_2-7		Dilution: 50
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 15.81 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4940	pg/g	9.89	38.2
40321-76-4	1,2,3,7,8-PeCDD	U	4.98	pg/g	4.98	191
39227-28-6	1,2,3,4,7,8-HxCDD	U	10.3	pg/g	10.3	191
57653-85-7	1,2,3,6,7,8-HxCDD	J	20.3	pg/g	12.2	191
19408-74-3	1,2,3,7,8,9-HxCDD	U	11.7	pg/g	11.7	191
35822-46-9	1,2,3,4,6,7,8-HpCDD		316	pg/g	20.6	191
3268-87-9	1,2,3,4,6,7,8,9-OCDD		3280	pg/g	76.7	382
51207-31-9	2,3,7,8-TCDF		40.2	pg/g	14.0	38.2
57117-41-6	1,2,3,7,8-PeCDF	U	21.8	pg/g	21.8	191
57117-31-4	2,3,4,7,8-PeCDF	U	10.7	pg/g	10.7	191
70648-26-9	1,2,3,4,7,8-HxCDF	U	9.51	pg/g	9.51	191
57117-44-9	1,2,3,6,7,8-HxCDF	U	9.34	pg/g	9.34	191
60851-34-5	2,3,4,6,7,8-HxCDF	U	8.62	pg/g	8.62	191
72918-21-9	1,2,3,7,8,9-HxCDF	U	14.9	pg/g	14.9	191
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	79.7	pg/g	7.54	191
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	11.1	pg/g	11.1	191
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	125	pg/g	35.5	382

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		126	153	pg/g	82.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		122	153	pg/g	79.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		121	153	pg/g	79.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		149	153	pg/g	97.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		121	153	pg/g	79.1	(23%-140%)
13C-OCDD		241	306	pg/g	78.9	(17%-157%)
13C-2,3,7,8-TCDF		121	153	pg/g	79.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		119	153	pg/g	77.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		115	153	pg/g	75.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		106	153	pg/g	69.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		141	153	pg/g	92.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		127	153	pg/g	83.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		94.7	153	pg/g	61.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		120	153	pg/g	78.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		109	153	pg/g	71.2	(26%-138%)
37Cl-2,3,7,8-TCDD		33.2	15.3	pg/g	217 *	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5983

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010171	LCS for batch 25649	13C-2,3,7,8-TCDD		82.1	(20%-175%)
		13C-1,2,3,7,8-PeCDD		79.0	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		76.7	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		79.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		77.2	(22%-166%)
		13C-OCDD		74.5	(13%-199%)
		13C-2,3,7,8-TCDF		81.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		78.4	(21%-192%)
		13C-2,3,4,7,8-PeCDF		77.7	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		71.2	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		74.7	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		75.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		69.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		74.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		69.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		104	(31%-191%)
		12010172	LCSD for batch 25649	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				82.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD				76.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD				81.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD				80.8	(22%-166%)
13C-OCDD				77.7	(13%-199%)
13C-2,3,7,8-TCDF				84.2	(22%-152%)
13C-1,2,3,7,8-PeCDF				79.7	(21%-192%)
13C-2,3,4,7,8-PeCDF				80.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF				72.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF				74.6	(21%-159%)
13C-2,3,4,6,7,8-HxCDF				77.8	(22%-176%)
13C-1,2,3,7,8,9-HxCDF				69.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF				76.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF				71.6	(20%-186%)
37Cl-2,3,7,8-TCDD				100	(31%-191%)
12010170	MB for batch 25649			13C-2,3,7,8-TCDD	
		13C-1,2,3,7,8-PeCDD		79.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		75.7	(23%-140%)
		13C-OCDD		69.4	(17%-157%)
		13C-2,3,7,8-TCDF		83.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		79.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		68.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		74.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		67.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		71.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		66.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		102	(35%-197%)
		5983002	SFRA-10	13C-2,3,7,8-TCDD	

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 5983

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
5983002	SFRA-10	13C-1,2,3,7,8-PeCDD		76.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		68.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.9	(23%-140%)
		13C-OCDD		86.7	(17%-157%)
		13C-2,3,7,8-TCDF		79.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		79.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		64.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		71.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		74.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		92.5	(35%-197%)
5983001	SFRA-9	13C-2,3,7,8-TCDD		92.3	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		84.2	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.3	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.8	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		82.2	D (23%-140%)
		13C-OCDD		86.6	D (17%-157%)
		13C-2,3,7,8-TCDF		87.5	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		81.3	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		82.1	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.0	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		91.2	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.3	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		62.0	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.6	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		70.7	D (26%-138%)
37Cl-2,3,7,8-TCDD		213 *	D (35%-197%)		
5983003	SFRA-11	13C-2,3,7,8-TCDD		82.4	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		79.8	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.3	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		97.5	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.1	D (23%-140%)
		13C-OCDD		78.9	D (17%-157%)
		13C-2,3,7,8-TCDF		79.4	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		77.9	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		75.2	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		69.1	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.5	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.2	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		61.9	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.3	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.2	D (26%-138%)
37Cl-2,3,7,8-TCDD		217 *	D (35%-197%)		

* Recovery outside Acceptance Limits

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5983

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5983

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25649

Matrix: SOLID

Lab Sample ID: 12010171

Instrument: HRP750

Analysis Date: 04/14/2014 16:20

Dilution: 1

Analyst: JTF

Prep Batch ID: 25649

Batch ID: 25651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.2	101	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	100	100	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	93.6	93.6	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	99.2	99.2	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	100	100	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	95.2	95.2	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	196	98.2	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	17.7	88.6	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	95.0	95	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	96.3	96.3	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	96.2	96.2	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	100	100	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	98.6	98.6	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	100	100	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	95.1	95.1	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	92.4	92.4	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	185	92.7	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5983

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25649

Matrix: SOLID

Lab Sample ID: 12010172

Instrument: HRP750

Analysis Date: 04/14/2014 17:07

Dilution: 1

Analyst: JTF

Prep Batch ID: 25649

Batch ID: 25651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.4	102	67-158	1.08	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	103	103	70-142	2.24	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	98.0	98	70-164	4.64	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	103	103	76-134	3.53	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	1.74	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	99.0	99	70-140	3.85	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	198	99.1	78-144	0.894	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	17.8	89	75-158	0.529	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	99.6	99.6	80-134	4.65	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	101	101	68-160	4.28	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	99.6	99.6	72-134	3.47	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	103	103	84-130	2.98	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	102	102	70-156	3.02	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	107	107	78-130	6.60	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	95.1	95.1	82-122	0.0526	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	95.5	95.5	78-138	3.28	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	189	94.5	63-170	1.90	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 5983
Client ID: MB for batch 25649
Lab Sample ID: 12010170
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 11-APR-14

Matrix: SOLID
Data File: b14apr14a-12
Analyzed: 04/14/14 17:55

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25649	12010171	b14apr14a-10	04/14/14	1620
02 LCSD for batch 25649	12010172	b14apr14a-11	04/14/14	1707
03 SFRA-10	5983002	b15apr14b_2-5	04/15/14	1951
04 SFRA-9	5983001	b15apr14b_2-6	04/15/14	2039
05 SFRA-11	5983003	b15apr14b_2-7	04/15/14	2127
06 SFRA-9	5983001	A16APR14A-4	04/16/14	0954
07 SFRA-11	5983003	A16APR14A-5	04/16/14	1014

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010170		Matrix: SOLID
Client Sample: QC for batch 25649		
Client ID: MB for batch 25649		Prep Basis: As Received
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/14/2014 17:55	Analyst: JTF	Instrument: HRP750
Data File: b14apr14a-12		Dilution: 1
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.16	pg/g	0.160	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.178	pg/g	0.178	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.224	pg/g	0.224	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.224	pg/g	0.224	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.23	pg/g	0.230	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.292	pg/g	0.292	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.592	pg/g	0.592	10.0
51207-31-9	2,3,7,8-TCDF	U	.175	pg/g	0.175	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.176	pg/g	0.115	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.117	pg/g	0.117	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.174	pg/g	0.174	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.137	pg/g	0.137	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.141	pg/g	0.141	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.216	pg/g	0.216	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.159	pg/g	0.159	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.276	pg/g	0.276	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.508	pg/g	0.508	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		164	200	pg/g	82.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		160	200	pg/g	79.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		147	200	pg/g	73.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	80.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		151	200	pg/g	75.7	(23%-140%)
13C-OCDD		277	400	pg/g	69.4	(17%-157%)
13C-2,3,7,8-TCDF		168	200	pg/g	83.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		160	200	pg/g	80.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		159	200	pg/g	79.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		137	200	pg/g	68.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		147	200	pg/g	73.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		148	200	pg/g	74.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		134	200	pg/g	67.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		144	200	pg/g	71.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		134	200	pg/g	66.8	(26%-138%)
37Cl-2,3,7,8-TCDD		20.4	20.0	pg/g	102	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010171		Matrix: SOLID
Client Sample: QC for batch 25649		
Client ID: LCS for batch 25649		Prep Basis: As Received
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/14/2014 16:20	Analyst: JTF	Instrument: HRP750
Data File: b14apr14a-10		Dilution: 1
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.2	pg/g	0.200	1.00
40321-76-4	1,2,3,7,8-PeCDD		100	pg/g	0.344	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		93.6	pg/g	0.524	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		99.2	pg/g	0.522	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		100	pg/g	0.538	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.2	pg/g	0.636	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		196	pg/g	2.36	10.0
51207-31-9	2,3,7,8-TCDF		17.7	pg/g	0.238	1.00
57117-41-6	1,2,3,7,8-PeCDF		95.0	pg/g	0.570	5.00
57117-31-4	2,3,4,7,8-PeCDF		96.3	pg/g	0.550	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		96.2	pg/g	0.776	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		100	pg/g	0.762	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		98.6	pg/g	0.796	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		100	pg/g	1.26	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		95.1	pg/g	0.566	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		92.4	pg/g	0.984	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		185	pg/g	2.38	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		164	200	pg/g	82.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		158	200	pg/g	79.0	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		153	200	pg/g	76.7	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	79.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		154	200	pg/g	77.2	(22%-166%)
13C-OCDD		298	400	pg/g	74.5	(13%-199%)
13C-2,3,7,8-TCDF		162	200	pg/g	81.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		157	200	pg/g	78.4	(21%-192%)
13C-2,3,4,7,8-PeCDF		155	200	pg/g	77.7	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		142	200	pg/g	71.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		149	200	pg/g	74.7	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		151	200	pg/g	75.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		138	200	pg/g	69.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		148	200	pg/g	74.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		140	200	pg/g	69.9	(20%-186%)
37Cl-2,3,7,8-TCDD		20.7	20.0	pg/g	104	(31%-191%)

Comments:**K Estimated Maximum Possible Concentration**

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5983	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010172		Matrix: SOLID
Client Sample: QC for batch 25649		
Client ID: LCSD for batch 25649		Prep Basis: As Received
Batch ID: 25651	Method: EPA Method 1613B	
Run Date: 04/14/2014 17:07	Analyst: JTF	Instrument: HRP750
Data File: b14apr14a-11		Dilution: 1
Prep Batch: 25649	Prep Method: SW846 3540C	
Prep Date: 11-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.4	pg/g	0.238	1.00
40321-76-4	1,2,3,7,8-PeCDD		103	pg/g	0.462	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.0	pg/g	0.520	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		103	pg/g	0.500	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.524	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.0	pg/g	0.650	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		198	pg/g	2.30	10.0
51207-31-9	2,3,7,8-TCDF		17.8	pg/g	0.264	1.00
57117-41-6	1,2,3,7,8-PeCDF		99.6	pg/g	0.488	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.472	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		99.6	pg/g	0.618	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		103	pg/g	0.628	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		102	pg/g	0.654	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		107	pg/g	1.02	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		95.1	pg/g	0.604	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		95.5	pg/g	1.10	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		189	pg/g	1.99	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		165	200	pg/g	82.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		164	200	pg/g	82.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		152	200	pg/g	76.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		162	200	pg/g	81.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		162	200	pg/g	80.8	(22%-166%)
13C-OCDD		311	400	pg/g	77.7	(13%-199%)
13C-2,3,7,8-TCDF		168	200	pg/g	84.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		159	200	pg/g	79.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		162	200	pg/g	80.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		144	200	pg/g	72.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		149	200	pg/g	74.6	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		156	200	pg/g	77.8	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		139	200	pg/g	69.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		153	200	pg/g	76.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		143	200	pg/g	71.6	(20%-186%)
37Cl-2,3,7,8-TCDD		20.0	20.0	pg/g	100	(31%-191%)

Comments:**K Estimated Maximum Possible Concentration**

April 18, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 5996
SDG: 5996_2

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 15, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number (1):
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request
 CFA Work Order Number: 5996
 Phone #: 314-517-6798
816-225-2331

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: **Tetra Tech Inc.** Phone #: **816-225-2331**

Sample Analysis Requested (5) (Fill in the number of containers for each test)

4																				
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Project/Site Name: **Stucker Forest Removal Action** Fax #:
 Address: **20 Jamestown Farm Drive**
 Collected by: **Christina Engemann** Send Results To: **dave.kinroth@charter.net**
CFA Dave K Engemann

<-- Preservative Type (6)

Comments
 Note: extra sample is required for sample specific QC

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers		
SFRA-12	4-14-14	1155	-	-	Soil	1	X	
-13	↓	1125	-	-	↓	↓		Each sample is 20 grams wet soil. Use 5g for drywt and rest for extraction & analysis
-14	↓	1310	-	-	↓	↓		
-15	↓	1325	-	-	↓	↓		
-16	↓	1335	-	-	↓	↓		
<i>OK 4/14/14</i>								

TAT Requested: Normal: Rush: Specify: Pls (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Possible Dioxins / Furans compounds

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures				Sample Shipping and Delivery Details			
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time		
Christina Engemann	4-14-14	1100	Cynde Larkins	15 APR 14	1115	CFA PM: Cynde Larkins	
						Method of Shipment: FedEx	Date Shipped: 4-14-14
						Airbill #: 8042-3157-0973	
						Airbill #:	

- 1.) Chain of Custody Number = Client Determined
- 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- 3.) Field Filtered: For liquid matrices, indicate with a-Y - for yes the sample was field filtered or- N - for sample was not field filtered.
- 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only
 Custody Seal Intact?
 YES NO
 Cooler Temp:
2.3 C

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 5996
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Received By: Cynde Larkins	Date/Time Received: 15 APR 14 1115
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Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other(describe) 2.30C
4	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
6	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
7	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
8	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CL**

Date: **15 APR 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 5996_2
Work Order 5996**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25687
Clean Up Batch Number: 25686
Extraction Batch Number: 25685

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
5996001	SFRA-12
5996002	SFRA-13
5996003	SFRA-14
5996004	SFRA-15
5996005	SFRA-16
12010198	Method Blank (MB)
12010199	Laboratory Control Sample (LCS)
12010200	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information**Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information**Holding Time Specifications**

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exception. A 1g extraction was performed on all samples in this work order due to the high levels of target analytes.

Sample Dilutions

Samples 5996003 (SFRA-14) and 5996004 (SFRA-15)- Batch 25687 were diluted due to the presence of overrange target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 5996_2 CFA Work Order: 5996

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 18 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 5996001	Date Collected: 04/14/2014 11:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/15/2014 11:15	%Moisture: 19.9
Client ID: SFRA-12		Prep Basis: Dry Weight
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/16/2014 20:32	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_4-9		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 1.27 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1080	pg/g	2.87	9.82
40321-76-4	1,2,3,7,8-PeCDD	U	3.16	pg/g	3.16	49.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.48	pg/g	3.48	49.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	6.80	pg/g	3.71	49.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	3.75	pg/g	3.71	49.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		163	pg/g	9.55	49.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		4260	pg/g	28.7	98.2
51207-31-9	2,3,7,8-TCDF	J	7.82	pg/g	0.998	9.82
57117-41-6	1,2,3,7,8-PeCDF	U	4.32	pg/g	4.32	49.1
57117-31-4	2,3,4,7,8-PeCDF	U	2.59	pg/g	2.59	49.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.03	pg/g	3.03	49.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	3.14	pg/g	3.14	49.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.12	pg/g	3.12	49.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.03	pg/g	5.03	49.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	20.8	pg/g	2.08	49.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3.16	pg/g	3.16	49.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	49.4	pg/g	8.74	98.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1690	1960	pg/g	85.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1820	1960	pg/g	92.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1500	1960	pg/g	76.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1580	1960	pg/g	80.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1650	1960	pg/g	83.9	(23%-140%)
13C-OCDD		3230	3930	pg/g	82.3	(17%-157%)
13C-2,3,7,8-TCDF		1740	1960	pg/g	88.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	1960	pg/g	97.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1900	1960	pg/g	96.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1410	1960	pg/g	72.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1480	1960	pg/g	75.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1510	1960	pg/g	76.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1360	1960	pg/g	69.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1620	1960	pg/g	82.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1540	1960	pg/g	78.4	(26%-138%)
37Cl-2,3,7,8-TCDD		209	196	pg/g	106	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 5996002	Date Collected: 04/14/2014 11:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/15/2014 11:15	%Moisture: 16.7
Client ID: SFRA-13		Prep Basis: Dry Weight
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/17/2014 12:39	Analyst: JTF	Instrument: HRP750
Data File: A17APR14A-5		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		20.7	pg/g	3.50	11.4

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 5996002	Date Collected: 04/14/2014 11:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/15/2014 11:15	%Moisture: 16.7
Client ID: SFRA-13		Prep Basis: Dry Weight
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/16/2014 21:20	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_4-10		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3080	pg/g	7.13	11.4
40321-76-4	1,2,3,7,8-PeCDD	U	6.1	pg/g	6.10	57.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	14.6	pg/g	14.6	57.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	19.1	pg/g	15.1	57.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	15.3	pg/g	15.3	57.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		367	pg/g	18.9	57.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5030	pg/g	63.3	114
51207-31-9	2,3,7,8-TCDF		21.0	pg/g	5.71	11.4
57117-41-6	1,2,3,7,8-PeCDF	J	7.27	pg/g	5.03	57.1
57117-31-4	2,3,4,7,8-PeCDF	U	5.44	pg/g	5.44	57.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	5.03	pg/g	5.03	57.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	5.01	pg/g	5.01	57.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	5.19	pg/g	5.19	57.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	8	pg/g	8.00	57.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		66.3	pg/g	6.99	57.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	11.3	pg/g	11.3	57.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		213	pg/g	33.6	114

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1870	2290	pg/g	81.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		2120	2290	pg/g	92.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1840	2290	pg/g	80.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2030	2290	pg/g	88.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1970	2290	pg/g	86.0	(23%-140%)
13C-OCDD		4310	4570	pg/g	94.2	(17%-157%)
13C-2,3,7,8-TCDF		1930	2290	pg/g	84.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		2190	2290	pg/g	95.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		2180	2290	pg/g	95.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1790	2290	pg/g	78.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1970	2290	pg/g	86.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1950	2290	pg/g	85.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1710	2290	pg/g	74.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2020	2290	pg/g	88.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2030	2290	pg/g	89.0	(26%-138%)
37Cl-2,3,7,8-TCDD		241	229	pg/g	106	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 5996003	Date Collected: 04/14/2014 13:10	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/15/2014 11:15	%Moisture: 19.2
Client ID: SFRA-14		Prep Basis: Dry Weight
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/17/2014 10:11	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_5-12		Dilution: 5
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 1.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		5670	pg/g	22.5	57.9
40321-76-4	1,2,3,7,8-PeCDD	U	19.9	pg/g	19.9	289
39227-28-6	1,2,3,4,7,8-HxCDD	U	25.9	pg/g	25.9	289
57653-85-7	1,2,3,6,7,8-HxCDD	U	24.8	pg/g	24.8	289
19408-74-3	1,2,3,7,8,9-HxCDD	U	25.9	pg/g	25.9	289
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	216	pg/g	42.6	289
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2800	pg/g	324	579
51207-31-9	2,3,7,8-TCDF	J	34.9	pg/g	33.1	57.9
57117-41-6	1,2,3,7,8-PeCDF	U	14.5	pg/g	14.5	289
57117-31-4	2,3,4,7,8-PeCDF	U	10.6	pg/g	10.6	289
70648-26-9	1,2,3,4,7,8-HxCDF	U	13.4	pg/g	13.4	289
57117-44-9	1,2,3,6,7,8-HxCDF	U	11.9	pg/g	11.9	289
60851-34-5	2,3,4,6,7,8-HxCDF	U	14.3	pg/g	14.3	289
72918-21-9	1,2,3,7,8,9-HxCDF	U	23.8	pg/g	23.8	289
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	53.4	pg/g	18.9	289
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	35.2	pg/g	35.2	289
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	90.6	pg/g	57.4	579

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1860	2310	pg/g	80.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		2000	2310	pg/g	86.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1750	2310	pg/g	75.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2150	2310	pg/g	92.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1970	2310	pg/g	85.1	(23%-140%)
13C-OCDD		3550	4630	pg/g	76.8	(17%-157%)
13C-2,3,7,8-TCDF		1880	2310	pg/g	81.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		2050	2310	pg/g	88.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2130	2310	pg/g	91.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1630	2310	pg/g	70.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1930	2310	pg/g	83.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1860	2310	pg/g	80.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1590	2310	pg/g	68.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1880	2310	pg/g	81.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1690	2310	pg/g	73.0	(26%-138%)
37Cl-2,3,7,8-TCDD		298	231	pg/g	129	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 5996004	Date Collected: 04/14/2014 13:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/15/2014 11:15	%Moisture: 18.1
Client ID: SFRA-15		Prep Basis: Dry Weight
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/17/2014 14:01	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_6-2		Dilution: 10
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		17400	pg/g	22.9	120
40321-76-4	1,2,3,7,8-PeCDD	U	23.5	pg/g	23.5	598
39227-28-6	1,2,3,4,7,8-HxCDD	U	31.1	pg/g	31.1	598
57653-85-7	1,2,3,6,7,8-HxCDD	J	150	pg/g	32.8	598
19408-74-3	1,2,3,7,8,9-HxCDD	J	49.1	pg/g	33.0	598
35822-46-9	1,2,3,4,6,7,8-HpCDD		1100	pg/g	42.4	598
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7790	pg/g	144	1200
51207-31-9	2,3,7,8-TCDF	J	106	pg/g	35.7	120
57117-41-6	1,2,3,7,8-PeCDF	U	20	pg/g	20.0	598
57117-31-4	2,3,4,7,8-PeCDF	U	21.2	pg/g	21.2	598
70648-26-9	1,2,3,4,7,8-HxCDF	U	19	pg/g	19.0	598
57117-44-9	1,2,3,6,7,8-HxCDF	U	17.7	pg/g	17.7	598
60851-34-5	2,3,4,6,7,8-HxCDF	J	20.2	pg/g	18.9	598
72918-21-9	1,2,3,7,8,9-HxCDF	U	24.2	pg/g	24.2	598
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	235	pg/g	33.7	598
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	52.9	pg/g	52.9	598
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	375	pg/g	57.4	1200

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2220	2390	pg/g	92.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		2150	2390	pg/g	89.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2080	2390	pg/g	86.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1990	2390	pg/g	83.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1940	2390	pg/g	81.2	(23%-140%)
13C-OCDD		3810	4790	pg/g	79.6	(17%-157%)
13C-2,3,7,8-TCDF		2170	2390	pg/g	90.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		2180	2390	pg/g	91.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		2200	2390	pg/g	92.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1920	2390	pg/g	80.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2390	pg/g	80.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1990	2390	pg/g	83.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1780	2390	pg/g	74.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1990	2390	pg/g	83.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1850	2390	pg/g	77.3	(26%-138%)
37Cl-2,3,7,8-TCDD		350	239	pg/g	146	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 5996005	Date Collected: 04/14/2014 13:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/15/2014 11:15	%Moisture: 20.1
Client ID: SFRA-16		Prep Basis: Dry Weight
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/17/2014 12:59	Analyst: JTF	Instrument: HRP750
Data File: A17APR14A-6		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 1.25 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		24.0	pg/g	2.50	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 5996005	Date Collected: 04/14/2014 13:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/15/2014 11:15	%Moisture: 20.1
Client ID: SFRA-16		Prep Basis: Dry Weight
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/17/2014 09:23	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_5-11		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 1.25 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3710	pg/g	3.46	10.0
40321-76-4	1,2,3,7,8-PeCDD	U	3.54	pg/g	3.54	50.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	11	pg/g	11.0	50.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	15.0	pg/g	11.4	50.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	11.5	pg/g	11.5	50.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		219	pg/g	11.5	50.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		4430	pg/g	72.5	100
51207-31-9	2,3,7,8-TCDF		24.3	pg/g	5.83	10.0
57117-41-6	1,2,3,7,8-PeCDF	J	5.67	pg/g	3.60	50.1
57117-31-4	2,3,4,7,8-PeCDF	U	3.56	pg/g	3.56	50.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	4.31	pg/g	2.78	50.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.7	pg/g	2.70	50.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	4.16	pg/g	2.72	50.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.88	pg/g	3.88	50.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	44.1	pg/g	5.37	50.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	9.25	pg/g	9.25	50.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	77.8	pg/g	8.43	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1860	2000	pg/g	92.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1880	2000	pg/g	93.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1510	2000	pg/g	75.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1830	2000	pg/g	91.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1690	2000	pg/g	84.6	(23%-140%)
13C-OCDD		3440	4000	pg/g	85.9	(17%-157%)
13C-2,3,7,8-TCDF		1780	2000	pg/g	89.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1920	2000	pg/g	95.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1850	2000	pg/g	92.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1490	2000	pg/g	74.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1640	2000	pg/g	81.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1620	2000	pg/g	81.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1460	2000	pg/g	73.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1650	2000	pg/g	82.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1620	2000	pg/g	80.9	(26%-138%)
37Cl-2,3,7,8-TCDD		224	200	pg/g	112	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5996_2

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010199	LCS for batch 25685	13C-2,3,7,8-TCDD		86.9	(20%-175%)
		13C-1,2,3,7,8-PeCDD		84.9	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		83.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		79.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		96.6	(22%-166%)
		13C-OCDD		97.8	(13%-199%)
		13C-2,3,7,8-TCDF		90.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		86.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		90.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		79.0	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		78.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		83.9	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		78.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		90.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		93.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		102	(31%-191%)
12010200	LCSD for batch 25685	13C-2,3,7,8-TCDD		91.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		100	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		87.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		95.3	(22%-166%)
		13C-OCDD		96.2	(13%-199%)
		13C-2,3,7,8-TCDF		91.6	(22%-152%)
		13C-1,2,3,7,8-PeCDF		101	(21%-192%)
		13C-2,3,4,7,8-PeCDF		101	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.2	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		86.2	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		79.5	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		92.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		92.7	(20%-186%)
		37Cl-2,3,7,8-TCDD		119	(31%-191%)
12010198	MB for batch 25685	13C-2,3,7,8-TCDD		84.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		97.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.7	(23%-140%)
		13C-OCDD		89.9	(17%-157%)
		13C-2,3,7,8-TCDF		85.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		99.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		98.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		76.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		88.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		102	(35%-197%)
5996001	SFRA-12	13C-2,3,7,8-TCDD		85.9	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5996_2

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
5996001	SFRA-12	13C-1,2,3,7,8-PeCDD		92.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		76.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.9	(23%-140%)
		13C-OCDD		82.3	(17%-157%)
		13C-2,3,7,8-TCDF		88.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		97.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		96.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		76.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		106	(35%-197%)
5996002	SFRA-13	13C-2,3,7,8-TCDD		81.8	(25%-164%)
		13C-1,2,3,7,8-PeCDD		92.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.0	(23%-140%)
		13C-OCDD		94.2	(17%-157%)
		13C-2,3,7,8-TCDF		84.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		95.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		95.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		86.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		74.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.0	(26%-138%)
37Cl-2,3,7,8-TCDD		106	(35%-197%)		
5996005	SFRA-16	13C-2,3,7,8-TCDD		92.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		93.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		75.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		91.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.6	(23%-140%)
		13C-OCDD		85.9	(17%-157%)
		13C-2,3,7,8-TCDF		89.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		95.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		73.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		80.9	(26%-138%)
37Cl-2,3,7,8-TCDD		112	(35%-197%)		
5996003	SFRA-14	13C-2,3,7,8-TCDD		80.6	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		86.6	D (25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 5996_2

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
5996003	SFRA-14	13C-1,2,3,4,7,8-HxCDD		75.7 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		92.7 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.1 D	(23%-140%)
		13C-OCDD		76.8 D	(17%-157%)
		13C-2,3,7,8-TCDF		81.3 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		88.4 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.9 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.6 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.5 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.4 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		68.5 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		81.4 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.0 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		129 D	(35%-197%)
		5996004	SFRA-15	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				89.9 D	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				86.7 D	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				83.0 D	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				81.2 D	(23%-140%)
13C-OCDD				79.6 D	(17%-157%)
13C-2,3,7,8-TCDF				90.7 D	(24%-169%)
13C-1,2,3,7,8-PeCDF				91.3 D	(24%-185%)
13C-2,3,4,7,8-PeCDF				92.0 D	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				80.1 D	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				80.1 D	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				83.3 D	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				74.4 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				83.1 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				77.3 D	(26%-138%)
37Cl-2,3,7,8-TCDD		146 D	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5996_2
Client ID: LCS for batch 25685
Lab Sample ID: 12010199
Instrument: HRP763
Analyst: JTF

Sample Type: Laboratory Control Sample
Matrix: SOLID
Analysis Date: 04/16/2014 18:09
Prep Batch ID: 25685
Batch ID: 25687

Dilution: 1

CAS No.	Parmname	Amount	Spike	Recovery	Acceptance	
		Added	Conc.	%	Limits	
		pg/g	pg/g			
1746-01-6	LCS	2,3,7,8-TCDD	20.0	21.1	105	67-158
40321-76-4	LCS	1,2,3,7,8-PeCDD	100	107	107	70-142
39227-28-6	LCS	1,2,3,4,7,8-HxCDD	100	100	100	70-164
57653-85-7	LCS	1,2,3,6,7,8-HxCDD	100	106	106	76-134
19408-74-3	LCS	1,2,3,7,8,9-HxCDD	100	108	108	64-162
35822-46-9	LCS	1,2,3,4,6,7,8-HpCDD	100	104	104	70-140
3268-87-9	LCS	1,2,3,4,6,7,8,9-OCDD	200	206	103	78-144
51207-31-9	LCS	2,3,7,8-TCDF	20.0	18.9	94.5	75-158
57117-41-6	LCS	1,2,3,7,8-PeCDF	100	102	102	80-134
57117-31-4	LCS	2,3,4,7,8-PeCDF	100	101	101	68-160
70648-26-9	LCS	1,2,3,4,7,8-HxCDF	100	103	103	72-134
57117-44-9	LCS	1,2,3,6,7,8-HxCDF	100	106	106	84-130
60851-34-5	LCS	2,3,4,6,7,8-HxCDF	100	105	105	70-156
72918-21-9	LCS	1,2,3,7,8,9-HxCDF	100	111	111	78-130
67562-39-4	LCS	1,2,3,4,6,7,8-HpCDF	100	101	101	82-122
55673-89-7	LCS	1,2,3,4,7,8,9-HpCDF	100	102	102	78-138
39001-02-0	LCS	1,2,3,4,6,7,8,9-OCDF	200	204	102	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 5996_2

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25685

Matrix: SOLID

Lab Sample ID: 12010200

Instrument: HRP763

Analysis Date: 04/16/2014 18:56

Dilution: 1

Analyst: JTF

Prep Batch ID: 25685

Batch ID: 25687

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.4	107	67-158	1.40	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	104	104	70-142	2.79	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	95.7	95.7	70-164	4.58	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	102	102	76-134	3.46	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	5.73	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	99.3	99.3	70-140	4.57	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	201	101	78-144	2.22	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.0	89.8	75-158	5.15	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	104	104	80-134	2.15	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	101	101	68-160	0.292	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	103	103	72-134	0.265	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	106	106	84-130	0.285	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	103	103	70-156	2.14	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	112	112	78-130	0.511	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	97.1	97.1	82-122	4.26	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	99.1	99.1	78-138	3.36	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	201	100	63-170	1.79	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 5996_2
Client ID: MB for batch 25685
Lab Sample ID: 12010198
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 15-APR-14

Matrix: SOLID
Data File: b15apr14b_4-8
Analyzed: 04/16/14 19:44

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25685	12010199	b15apr14b_4-6	04/16/14	1809
02 LCSD for batch 25685	12010200	b15apr14b_4-7	04/16/14	1856
03 SFRA-12	5996001	b15apr14b_4-9	04/16/14	2032
04 SFRA-13	5996002	b15apr14b_4-10	04/16/14	2120
05 SFRA-16	5996005	b15apr14b_5-11	04/17/14	0923
06 SFRA-14	5996003	b15apr14b_5-12	04/17/14	1011
07 SFRA-13	5996002	A17APR14A-5	04/17/14	1239
08 SFRA-16	5996005	A17APR14A-6	04/17/14	1259
09 SFRA-15	5996004	b15apr14b_6-2	04/17/14	1401

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010198		Matrix: SOLID
Client Sample: QC for batch 25685		
Client ID: MB for batch 25685		Prep Basis: As Received
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/16/2014 19:44	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_4-8		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.226	pg/g	0.226	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.206	pg/g	0.206	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.244	pg/g	0.244	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.254	pg/g	0.254	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.256	pg/g	0.256	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.364	pg/g	0.364	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	1.07	pg/g	0.928	10.0
51207-31-9	2,3,7,8-TCDF	U	.254	pg/g	0.254	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.157	pg/g	0.157	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.145	pg/g	0.145	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.143	pg/g	0.143	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.142	pg/g	0.142	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.149	pg/g	0.149	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.208	pg/g	0.208	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.191	pg/g	0.191	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.312	pg/g	0.312	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.546	pg/g	0.546	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		169	200	pg/g	84.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		196	200	pg/g	97.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		165	200	pg/g	82.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		167	200	pg/g	83.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		185	200	pg/g	92.7	(23%-140%)
13C-OCDD		359	400	pg/g	89.9	(17%-157%)
13C-2,3,7,8-TCDF		172	200	pg/g	85.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		200	200	pg/g	99.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		197	200	pg/g	98.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		154	200	pg/g	76.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		158	200	pg/g	79.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		164	200	pg/g	82.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		153	200	pg/g	76.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		177	200	pg/g	88.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		177	200	pg/g	88.4	(26%-138%)
37Cl-2,3,7,8-TCDD		20.4	20.0	pg/g	102	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010199		Matrix: SOLID
Client Sample: QC for batch 25685		
Client ID: LCS for batch 25685		Prep Basis: As Received
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/16/2014 18:09	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_4-6		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.1	pg/g	0.718	1.00
40321-76-4	1,2,3,7,8-PeCDD		107	pg/g	0.748	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		100	pg/g	0.750	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		106	pg/g	0.770	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		108	pg/g	0.784	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		104	pg/g	1.05	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		206	pg/g	2.10	10.0
51207-31-9	2,3,7,8-TCDF		18.9	pg/g	0.908	1.00
57117-41-6	1,2,3,7,8-PeCDF		102	pg/g	0.740	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.734	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		103	pg/g	0.762	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		106	pg/g	0.730	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		105	pg/g	0.742	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		111	pg/g	1.07	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.760	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		102	pg/g	1.14	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		204	pg/g	1.95	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		174	200	pg/g	86.9	(20%-175%)
13C-1,2,3,7,8-PeCDD		170	200	pg/g	84.9	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		167	200	pg/g	83.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	79.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		193	200	pg/g	96.6	(22%-166%)
13C-OCDD		391	400	pg/g	97.8	(13%-199%)
13C-2,3,7,8-TCDF		181	200	pg/g	90.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		172	200	pg/g	86.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		181	200	pg/g	90.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		158	200	pg/g	79.0	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		158	200	pg/g	78.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		168	200	pg/g	83.9	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		157	200	pg/g	78.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		182	200	pg/g	90.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		187	200	pg/g	93.4	(20%-186%)
37Cl-2,3,7,8-TCDD		20.4	20.0	pg/g	102	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 5996_2	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010200		Matrix: SOLID
Client Sample: QC for batch 25685		
Client ID: LCSD for batch 25685		Prep Basis: As Received
Batch ID: 25687	Method: EPA Method 1613B	
Run Date: 04/16/2014 18:56	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_4-7		Dilution: 1
Prep Batch: 25685	Prep Method: SW846 3540C	
Prep Date: 15-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.4	pg/g	0.424	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.616	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.7	pg/g	0.580	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	0.594	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.606	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.3	pg/g	0.946	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		201	pg/g	2.32	10.0
51207-31-9	2,3,7,8-TCDF		18.0	pg/g	0.390	1.00
57117-41-6	1,2,3,7,8-PeCDF		104	pg/g	0.850	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.814	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		103	pg/g	0.658	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		106	pg/g	0.650	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		103	pg/g	0.672	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		112	pg/g	0.964	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.1	pg/g	0.862	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.1	pg/g	1.48	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		201	pg/g	1.91	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		183	200	pg/g	91.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		201	200	pg/g	100	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		175	200	pg/g	87.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		170	200	pg/g	85.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		191	200	pg/g	95.3	(22%-166%)
13C-OCDD		385	400	pg/g	96.2	(13%-199%)
13C-2,3,7,8-TCDF		183	200	pg/g	91.6	(22%-152%)
13C-1,2,3,7,8-PeCDF		202	200	pg/g	101	(21%-192%)
13C-2,3,4,7,8-PeCDF		202	200	pg/g	101	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		160	200	pg/g	80.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		160	200	pg/g	80.2	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		172	200	pg/g	86.2	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		159	200	pg/g	79.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		186	200	pg/g	92.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		185	200	pg/g	92.7	(20%-186%)
37Cl-2,3,7,8-TCDD		23.9	20.0	pg/g	119	(31%-191%)

Comments:

April 22, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6005

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 17, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Tetra Tech Inc.

CFA WO# 6005
CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

72 Hour Rush
Turn around

ACTIVITY LEADER(Print) Heath Smith, Dave Kinroth	NAME OF SURVEY OR ACTIVITY Strecker Forest RIA	DATE OF COLLECTION 11 DAY 04 MONTH 14 YEAR	SHEET 1 of 1
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CONTENTS OF SHIPMENT

Time
1547
1555

SAMPLE NUMBER	TYPE OF CONTAINERS				SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)	
	CUBITAINER	4oz BOTTLE	BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	water	soil	sediment		other
SFRA-17		X					X			11013B Dioxins/Furans 20g sample each - use 15g for extraction & 5g for dry wt.
-18		↓					X			
ONE 4/16/14										

DESCRIPTION OF SHIPMENT ____ PIECE(S) CONSISTING OF ____ BOX(ES) 1 ICE CHEST(S); OTHER _____	MODE OF SHIPMENT <input checked="" type="checkbox"/> COMMERCIAL CARRIER: Fed Ex <input type="checkbox"/> COURIER <input type="checkbox"/> SAMPLER CONVEYED
	8042 3157 0902 (SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD			
RELINQUISHED BY (SAMPLER) <i>Christina Egan</i> <input checked="" type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	DATE 4-16-14	TIME 1700	RECEIVED BY <i>Cynde Perkins</i> 17 APR 14 1020 <input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED
RELINQUISHED BY	DATE	TIME	RECEIVED BY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED
RELINQUISHED BY	DATE	TIME	RECEIVED BY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED

temp = 1.8°C

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 6005
Received By: Cynde Larkins	Date/Time Received: 17 APR 14 1020

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?		<input checked="" type="checkbox"/>	
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		<input checked="" type="checkbox"/>	
Samples < 2x background?		<input checked="" type="checkbox"/>	

* Notify RSO of any responses in this column immediately.

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			-
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other(describe) 1.8°C
4	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
6	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
7	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
8	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CL** Date: **17 APR 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6005**

Method/Analysis Information

Product: **Dioxins/Furans by EPA Method 1613B in Solids**
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25708
Clean Up Batch Number: 25707
Extraction Batch Number: 25706

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
6005001	SFRA-17
6005002	SFRA-18
12010223	Method Blank (MB)
12010224	Laboratory Control Sample (LCS)
12010225	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed on all samples in this work order due to the high levels of target analytes that may be present.

Sample Dilutions

Sample 6005002 (SFRA-18)- Batch 25708 was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6005 CFA Work Order: 6005

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 22 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6005	Client: TETR001	Project: TETR00114
Lab Sample ID: 6005001	Date Collected: 04/16/2014 15:47	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/17/2014 10:20	%Moisture: 19.2
Client ID: SFRA-17		Prep Basis: Dry Weight
Batch ID: 25708	Method: EPA Method 1613B	
Run Date: 04/19/2014 00:03	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_9-4		Dilution: 1
Prep Batch: 25706	Prep Method: SW846 3540C	
Prep Date: 17-APR-14	Prep Aliquot: 1.12 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	4.46	pg/g	4.46	11.0
40321-76-4	1,2,3,7,8-PeCDD	U	2.98	pg/g	2.98	55.2
39227-28-6	1,2,3,4,7,8-HxCDD	U	4.51	pg/g	4.51	55.2
57653-85-7	1,2,3,6,7,8-HxCDD	U	4.75	pg/g	4.75	55.2
19408-74-3	1,2,3,7,8,9-HxCDD	U	4.77	pg/g	4.77	55.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		60.6	pg/g	11.8	55.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2810	pg/g	33.8	110
51207-31-9	2,3,7,8-TCDF	U	1.91	pg/g	1.91	11.0
57117-41-6	1,2,3,7,8-PeCDF	U	2.01	pg/g	2.01	55.2
57117-31-4	2,3,4,7,8-PeCDF	U	2.04	pg/g	2.04	55.2
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.23	pg/g	3.23	55.2
57117-44-9	1,2,3,6,7,8-HxCDF	U	3.14	pg/g	3.14	55.2
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.27	pg/g	3.27	55.2
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.9	pg/g	4.90	55.2
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	4.84	pg/g	4.84	55.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	7.67	pg/g	7.67	55.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	7.84	pg/g	7.84	110

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1770	2210	pg/g	80.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1870	2210	pg/g	84.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1620	2210	pg/g	73.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1810	2210	pg/g	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1690	2210	pg/g	76.5	(23%-140%)
13C-OCDD		3110	4420	pg/g	70.3	(17%-157%)
13C-2,3,7,8-TCDF		1870	2210	pg/g	84.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1930	2210	pg/g	87.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1920	2210	pg/g	86.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1500	2210	pg/g	67.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1750	2210	pg/g	79.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1700	2210	pg/g	77.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1540	2210	pg/g	69.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1690	2210	pg/g	76.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1630	2210	pg/g	73.6	(26%-138%)
37Cl-2,3,7,8-TCDD		214	221	pg/g	96.6	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6005	Client: TETR001	Project: TETR00114
Lab Sample ID: 6005002	Date Collected: 04/16/2014 15:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/17/2014 10:20	%Moisture: 18.5
Client ID: SFRA-18		Prep Basis: Dry Weight
Batch ID: 25708	Method: EPA Method 1613B	
Run Date: 04/21/2014 11:02	Analyst: JTF	Instrument: HRP750
Data File: A21APR14A-4		Dilution: 2
Prep Batch: 25706	Prep Method: SW846 3540C	
Prep Date: 17-APR-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		40.1	pg/g	14.7	21.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6005	Client: TETR001	Project: TETR00114
Lab Sample ID: 6005002	Date Collected: 04/16/2014 15:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/17/2014 10:20	%Moisture: 18.5
Client ID: SFRA-18		Prep Basis: Dry Weight
Batch ID: 25708	Method: EPA Method 1613B	
Run Date: 04/21/2014 14:35	Analyst: JTF	Instrument: HRP763
Data File: b21apr14a-3		Dilution: 2
Prep Batch: 25706	Prep Method: SW846 3540C	
Prep Date: 17-APR-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4830	pg/g	10.1	21.7
40321-76-4	1,2,3,7,8-PeCDD	U	5.97	pg/g	5.97	109
39227-28-6	1,2,3,4,7,8-HxCDD	U	13	pg/g	13.0	109
57653-85-7	1,2,3,6,7,8-HxCDD	J	15.7	pg/g	12.3	109
19408-74-3	1,2,3,7,8,9-HxCDD	U	12.9	pg/g	12.9	109
35822-46-9	1,2,3,4,6,7,8-HpCDD		286	pg/g	20.9	109
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2890	pg/g	121	217
51207-31-9	2,3,7,8-TCDF		35.7	pg/g	11.9	21.7
57117-41-6	1,2,3,7,8-PeCDF	J	18.1	pg/g	8.53	109
57117-31-4	2,3,4,7,8-PeCDF	U	8.79	pg/g	8.79	109
70648-26-9	1,2,3,4,7,8-HxCDF	U	8.68	pg/g	8.68	109
57117-44-9	1,2,3,6,7,8-HxCDF	U	7.97	pg/g	7.97	109
60851-34-5	2,3,4,6,7,8-HxCDF	U	8.92	pg/g	8.92	109
72918-21-9	1,2,3,7,8,9-HxCDF	U	13.3	pg/g	13.3	109
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	71.5	pg/g	8.75	109
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	16.9	pg/g	16.9	109
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	145	pg/g	70.8	217

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1690	2170	pg/g	77.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1780	2170	pg/g	82.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1360	2170	pg/g	62.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1800	2170	pg/g	83.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1540	2170	pg/g	70.9	(23%-140%)
13C-OCDD		2540	4340	pg/g	58.5	(17%-157%)
13C-2,3,7,8-TCDF		1800	2170	pg/g	83.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1900	2170	pg/g	87.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1860	2170	pg/g	85.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1340	2170	pg/g	61.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1770	2170	pg/g	81.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1680	2170	pg/g	77.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1540	2170	pg/g	71.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1670	2170	pg/g	77.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1430	2170	pg/g	65.8	(26%-138%)
37Cl-2,3,7,8-TCDD		215	217	pg/g	98.9	(35%-197%)

Comments:

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6005

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010224	LCS for batch 25706	13C-2,3,7,8-TCDD		81.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		86.6	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		71.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		79.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		80.9	(22%-166%)
		13C-OCDD		77.2	(13%-199%)
		13C-2,3,7,8-TCDF		84.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		85.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		87.1	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		65.2	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		72.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		74.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		67.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		76.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		98.9	(31%-191%)
12010225	LCSD for batch 25706	13C-2,3,7,8-TCDD		79.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		84.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.1	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		84.1	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		87.4	(22%-166%)
		13C-OCDD		85.4	(13%-199%)
		13C-2,3,7,8-TCDF		82.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		83.3	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		71.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		82.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		80.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		70.5	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		83.7	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		84.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		98.7	(31%-191%)
12010223	MB for batch 25706	13C-2,3,7,8-TCDD		73.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		64.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		70.5	(23%-140%)
		13C-OCDD		67.4	(17%-157%)
		13C-2,3,7,8-TCDF		77.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		81.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		81.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		60.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		69.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		62.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		69.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		67.3	(26%-138%)
		37Cl-2,3,7,8-TCDD		90.7	(35%-197%)
6005001	SFRA-17	13C-2,3,7,8-TCDD		80.2	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6005

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6005001	SFRA-17	13C-1,2,3,7,8-PeCDD		84.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.5	(23%-140%)
		13C-OCDD		70.3	(17%-157%)
		13C-2,3,7,8-TCDF		84.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		67.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		96.6	(35%-197%)
6005002	SFRA-18	13C-2,3,7,8-TCDD		77.7	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		82.0	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		62.4	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.1	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		70.9	D (23%-140%)
		13C-OCDD		58.5	D (17%-157%)
		13C-2,3,7,8-TCDF		83.0	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		87.6	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		85.7	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		61.7	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.4	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.2	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		71.1	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.0	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		65.8	D (26%-138%)
37Cl-2,3,7,8-TCDD		98.9	D (35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6005
Client ID: LCS for batch 25706
Lab Sample ID: 12010224
Instrument: HRP763
Analyst: JTF

Sample Type: Laboratory Control Sample
Matrix: SOLID
Analysis Date: 04/18/2014 21:41
Prep Batch ID: 25706
Batch ID: 25708
Dilution: 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.0	99.9	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	103	103	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	96.3	96.3	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	102	102	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	106	106	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	99.1	99.1	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	201	101	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.0	95.2	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	103	103	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	104	104	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	105	105	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	108	108	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	105	105	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	112	112	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	103	103	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	99.0	99	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	207	103	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6005
Client ID: LCSD for batch 25706
Lab Sample ID: 12010225
Instrument: HRP763
Analyst: JTF

Sample Type: Laboratory Control Sample Duplicate
Matrix: SOLID
Analysis Date: 04/18/2014 22:28
Prep Batch ID: 25706
Batch ID: 25708
Dilution: 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.2	106	67-158	5.81	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	104	104	70-142	0.729	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	96.0	96	70-164	0.287	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	104	104	76-134	1.91	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	104	104	64-162	2.27	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	102	102	70-140	3.24	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	198	98.8	78-144	1.97	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.7	93.6	75-158	1.62	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	102	102	80-134	1.00	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	105	105	68-160	0.722	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	104	104	72-134	1.25	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	105	105	84-130	2.71	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	106	106	70-156	1.26	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	113	113	78-130	1.00	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	102	102	82-122	0.327	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	100	100	78-138	1.45	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	208	104	63-170	0.494	0-20

Method Blank Summary

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SDG Number: 6005
Client ID: MB for batch 25706
Lab Sample ID: 12010223
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 17-APR-14

Matrix: SOLID
Data File: b15apr14b_9-3
Analyzed: 04/18/14 23:15

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25706	12010224	b15apr14b_9-1	04/18/14	2141
02 LCSD for batch 25706	12010225	b15apr14b_9-2	04/18/14	2228
03 SFRA-17	6005001	b15apr14b_9-4	04/19/14	0003
04 SFRA-18	6005002	A21APR14A-4	04/21/14	1102
05 SFRA-18	6005002	b21apr14a-3	04/21/14	1435

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6005	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010223		Matrix: SOLID
Client Sample: QC for batch 25706		
Client ID: MB for batch 25706		Prep Basis: As Received
Batch ID: 25708	Method: EPA Method 1613B	
Run Date: 04/18/2014 23:15	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_9-3		Dilution: 1
Prep Batch: 25706	Prep Method: SW846 3540C	
Prep Date: 17-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.188	pg/g	0.188	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.266	pg/g	0.266	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.372	pg/g	0.372	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.392	pg/g	0.392	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.392	pg/g	0.392	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.65	pg/g	0.650	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	3.65	pg/g	0.864	10.0
51207-31-9	2,3,7,8-TCDF	U	.147	pg/g	0.147	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.202	pg/g	0.202	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.196	pg/g	0.196	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.264	pg/g	0.264	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.264	pg/g	0.264	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.266	pg/g	0.266	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.398	pg/g	0.398	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.536	pg/g	0.468	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.8	pg/g	0.800	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.968	pg/g	0.768	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		147	200	pg/g	73.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		160	200	pg/g	79.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		129	200	pg/g	64.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		154	200	pg/g	76.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		141	200	pg/g	70.5	(23%-140%)
13C-OCDD		270	400	pg/g	67.4	(17%-157%)
13C-2,3,7,8-TCDF		155	200	pg/g	77.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		163	200	pg/g	81.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		163	200	pg/g	81.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		121	200	pg/g	60.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		142	200	pg/g	70.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		138	200	pg/g	69.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		126	200	pg/g	62.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		140	200	pg/g	69.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		135	200	pg/g	67.3	(26%-138%)
37Cl-2,3,7,8-TCDD		18.1	20.0	pg/g	90.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6005	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010224		Matrix: SOLID
Client Sample: QC for batch 25706		
Client ID: LCS for batch 25706		Prep Basis: As Received
Batch ID: 25708	Method: EPA Method 1613B	
Run Date: 04/18/2014 21:41	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_9-1		Dilution: 1
Prep Batch: 25706	Prep Method: SW846 3540C	
Prep Date: 17-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.0	pg/g	0.270	1.00
40321-76-4	1,2,3,7,8-PeCDD		103	pg/g	0.464	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.3	pg/g	0.608	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	0.624	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		106	pg/g	0.634	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.1	pg/g	0.874	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		201	pg/g	2.14	10.0
51207-31-9	2,3,7,8-TCDF		19.0	pg/g	0.244	1.00
57117-41-6	1,2,3,7,8-PeCDF		103	pg/g	0.612	5.00
57117-31-4	2,3,4,7,8-PeCDF		104	pg/g	0.618	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		105	pg/g	0.778	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		108	pg/g	0.726	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		105	pg/g	0.744	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		112	pg/g	1.16	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		103	pg/g	0.742	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.0	pg/g	1.10	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		207	pg/g	2.82	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		164	200	pg/g	81.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		173	200	pg/g	86.6	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		143	200	pg/g	71.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		159	200	pg/g	79.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		162	200	pg/g	80.9	(22%-166%)
13C-OCDD		309	400	pg/g	77.2	(13%-199%)
13C-2,3,7,8-TCDF		168	200	pg/g	84.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		172	200	pg/g	85.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		174	200	pg/g	87.1	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		130	200	pg/g	65.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		145	200	pg/g	72.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		149	200	pg/g	74.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		134	200	pg/g	67.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		152	200	pg/g	76.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		159	200	pg/g	79.3	(20%-186%)
37Cl-2,3,7,8-TCDD		19.8	20.0	pg/g	98.9	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6005	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010225		Matrix: SOLID
Client Sample: QC for batch 25706		
Client ID: LCSD for batch 25706		Prep Basis: As Received
Batch ID: 25708	Method: EPA Method 1613B	
Run Date: 04/18/2014 22:28	Analyst: JTF	Instrument: HRP763
Data File: b15apr14b_9-2		Dilution: 1
Prep Batch: 25706	Prep Method: SW846 3540C	
Prep Date: 17-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.2	pg/g	0.258	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.430	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.0	pg/g	0.710	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		104	pg/g	0.708	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		104	pg/g	0.728	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	0.888	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		198	pg/g	3.12	10.0
51207-31-9	2,3,7,8-TCDF		18.7	pg/g	0.282	1.00
57117-41-6	1,2,3,7,8-PeCDF		102	pg/g	0.480	5.00
57117-31-4	2,3,4,7,8-PeCDF		105	pg/g	0.474	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		104	pg/g	0.924	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		105	pg/g	0.900	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		106	pg/g	0.934	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		113	pg/g	1.46	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		102	pg/g	0.918	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		100	pg/g	1.48	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		208	pg/g	2.38	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		159	200	pg/g	79.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		168	200	pg/g	84.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	78.1	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		168	200	pg/g	84.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		175	200	pg/g	87.4	(22%-166%)
13C-OCDD		342	400	pg/g	85.4	(13%-199%)
13C-2,3,7,8-TCDF		164	200	pg/g	82.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		167	200	pg/g	83.3	(21%-192%)
13C-2,3,4,7,8-PeCDF		170	200	pg/g	85.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		143	200	pg/g	71.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		164	200	pg/g	82.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		161	200	pg/g	80.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		141	200	pg/g	70.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		167	200	pg/g	83.7	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		169	200	pg/g	84.3	(20%-186%)
37Cl-2,3,7,8-TCDD		19.7	20.0	pg/g	98.7	(31%-191%)

Comments:

April 23, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6010

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 18, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Tetra Tech Inc.

CFA WO# 6010
CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

72 Hour Rush
Turnaround

ACTIVITY LEADER(Print) Heath Smith, Dave Kinroth	NAME OF SURVEY OR ACTIVITY Strecker Forest RA	DATE OF COLLECTION 17 04 14 DAY MONTH YEAR	SHEET 1 of 1
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CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS				VOA SET (2 VIALS EA)	SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)	
	CUBITAINER	^{4oz.} BOTTLE	BOTTLE	BOTTLE		water	soil	sediment	dust		other
NUMBERS OF CONTAINERS PER SAMPLE NUMBER											
SFRA-19		X				X					11013 B Dioxins/Furans • 20g sample, use 15g for extraction and 5g for dry wt.
<p>OK 4-17-14</p>											
<p>temp. upon receipt = 3.1°C</p>											

Time
1620

DESCRIPTION OF SHIPMENT ____ PIECE(S) CONSISTING OF ____ BOX(ES) ____ ICE CHEST(S); OTHER _____	MODE OF SHIPMENT <input checked="" type="checkbox"/> COMMERCIAL CARRIER: Fed Ex ____ COURIER ____ SAMPLER CONVEYED
	8042 3157 0951 (SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD				REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY (SAMPLER) <i>Christina Engeman</i> <input checked="" type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	DATE 4/17/14	TIME 1815	RECEIVED BY <i>Cynde Perkins</i> <input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	18 APRIL 1000
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6010
Received By: Cynde Larkins	Date/Time Received: 18 APR 14 1000

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			✓
Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other (describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other (describe) 3.1°C
4	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5	Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
6	Samples received within holding time?	✓			Sample IDs, tests affected:
7	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
8	Date & time of COC match date & time on containers?			✓	Sample IDs, containers affected: Collection time not noted on label
9	Number of containers received match number indicated on COC?			✓	Sample IDs, containers affected: 1 container
10	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: **CL** Date: **18 APR 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6010**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25712
Clean Up Batch Number: 25711
Extraction Batch Number: 25710

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6010001	SFRA-19
12010227	Method Blank (MB)
12010228	Laboratory Control Sample (LCS)
12010229	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

Sample 6010001 (SFRA-19)- Batch 25712 was diluted due to the presence of over range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6010 CFA Work Order: 6010


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 23 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6010	Client: TETR001	Project: TETR00114
Lab Sample ID: 6010001	Date Collected: 04/17/2014 16:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/18/2014 10:00	%Moisture: 19.9
Client ID: SFRA-19		Prep Basis: Dry Weight
Batch ID: 25712	Method: EPA Method 1613B	
Run Date: 04/22/2014 10:41	Analyst: JTF	Instrument: HRP763
Data File: b21apr14a_2-13		Dilution: 2
Prep Batch: 25710	Prep Method: SW846 3540C	
Prep Date: 20-APR-14	Prep Aliquot: 1.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4540	pg/g	9.75	21.7
40321-76-4	1,2,3,7,8-PeCDD	U	5.62	pg/g	5.62	109
39227-28-6	1,2,3,4,7,8-HxCDD	U	8.73	pg/g	8.73	109
57653-85-7	1,2,3,6,7,8-HxCDD	J	20.7	pg/g	9.03	109
19408-74-3	1,2,3,7,8,9-HxCDD	U	9.12	pg/g	9.12	109
35822-46-9	1,2,3,4,6,7,8-HpCDD		396	pg/g	29.7	109
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5800	pg/g	68.4	217
51207-31-9	2,3,7,8-TCDF		28.5	pg/g	7.80	21.7
57117-41-6	1,2,3,7,8-PeCDF	J	10.8	pg/g	6.23	109
57117-31-4	2,3,4,7,8-PeCDF	U	6.25	pg/g	6.25	109
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.90	pg/g	4.80	109
57117-44-9	1,2,3,6,7,8-HxCDF	U	4.6	pg/g	4.60	109
60851-34-5	2,3,4,6,7,8-HxCDF	J	5.34	pg/g	4.95	109
72918-21-9	1,2,3,7,8,9-HxCDF	U	7.88	pg/g	7.88	109
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	77.6	pg/g	6.69	109
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	12.2	pg/g	12.2	109
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	215	pg/g	34.3	217

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1840	2170	pg/g	84.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		2020	2170	pg/g	93.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1640	2170	pg/g	75.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1940	2170	pg/g	89.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1650	2170	pg/g	75.8	(23%-140%)
13C-OCDD		2990	4340	pg/g	68.8	(17%-157%)
13C-2,3,7,8-TCDF		1980	2170	pg/g	91.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1960	2170	pg/g	90.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1910	2170	pg/g	87.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1530	2170	pg/g	70.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1830	2170	pg/g	84.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1750	2170	pg/g	80.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1520	2170	pg/g	70.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1710	2170	pg/g	78.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1550	2170	pg/g	71.4	(26%-138%)
37Cl-2,3,7,8-TCDD		247	217	pg/g	114	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6010	Client: TETR001	Project: TETR00114
Lab Sample ID: 6010001	Date Collected: 04/17/2014 16:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/18/2014 10:00	%Moisture: 19.9
Client ID: SFRA-19		Prep Basis: Dry Weight
Batch ID: 25712	Method: EPA Method 1613B	
Run Date: 04/22/2014 15:01	Analyst: JTF	Instrument: HRP763
Data File: b22apr14b4		Dilution: 2
Prep Batch: 25710	Prep Method: SW846 3540C	
Prep Date: 20-APR-14	Prep Aliquot: 1.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		38.6	pg/g	11.4	21.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6010

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010228	LCS for batch 25710	13C-2,3,7,8-TCDD		73.9	(20%-175%)
		13C-1,2,3,7,8-PeCDD		82.8	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		62.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		76.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		66.6	(22%-166%)
		13C-OCDD		63.3	(13%-199%)
		13C-2,3,7,8-TCDF		80.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		82.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		81.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		59.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		74.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		70.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		65.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		67.5	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		61.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		96.4	(31%-191%)
12010229	LCSD for batch 25710	13C-2,3,7,8-TCDD		72.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		80.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		62.6	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		78.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		71.6	(22%-166%)
		13C-OCDD		65.1	(13%-199%)
		13C-2,3,7,8-TCDF		82.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		81.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		80.7	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		62.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		75.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		71.2	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		65.3	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		70.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		67.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		98.3	(31%-191%)
12010227	MB for batch 25710	13C-2,3,7,8-TCDD		83.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		91.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		69.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		72.7	(23%-140%)
		13C-OCDD		64.9	(17%-157%)
		13C-2,3,7,8-TCDF		89.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		66.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		75.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		71.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		62.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		104	(35%-197%)
6010001	SFRA-19	13C-2,3,7,8-TCDD		84.9	D (25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6010

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6010001	SFRA-19	13C-1,2,3,7,8-PeCDD		93.2 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		75.7 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.3 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		75.8 D	(23%-140%)
		13C-OCDD		68.8 D	(17%-157%)
		13C-2,3,7,8-TCDF		91.3 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.1 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.9 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.3 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		84.3 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.7 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.2 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.9 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.4 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		114 D	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6010

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25710

Matrix: SOLID

Lab Sample ID: 12010228

Instrument: HRP763

Analysis Date: 04/21/2014 15:28

Dilution: 1

Analyst: JTF

Prep Batch ID: 25710

Batch ID: 25712

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.6	108	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	99.8	99.8	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	95.3	95.3	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	104	104	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	103	103	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	103	103	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	194	97	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.4	92.1	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	104	104	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	105	105	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	104	104	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	105	105	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	103	103	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	107	107	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	106	106	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	105	105	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	207	104	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6010

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25710

Matrix: SOLID

Lab Sample ID: 12010229

Instrument: HRP763

Analysis Date: 04/21/2014 16:15

Dilution: 1

Analyst: JTF

Prep Batch ID: 25710

Batch ID: 25712

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	22.4	112	67-158	3.85	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	111	111	70-142	10.3	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	104	104	70-164	8.38	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	109	109	76-134	5.29	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	116	116	64-162	11.5	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	102	102	70-140	0.654	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	213	106	78-144	9.15	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.7	98.7	75-158	6.94	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	107	107	80-134	3.27	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	110	110	68-160	4.55	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	108	108	72-134	4.43	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	111	111	84-130	5.89	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	110	110	70-156	6.73	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	110	110	78-130	2.58	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	112	112	82-122	4.74	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	105	105	78-138	0.245	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	220	110	63-170	5.81	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6010
Client ID: MB for batch 25710
Lab Sample ID: 12010227
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 20-APR-14

Matrix: SOLID
Data File: b21apr14a-6
Analyzed: 04/21/14 17:03

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25710	12010228	b21apr14a-4	04/21/14	1528
02 LCSD for batch 25710	12010229	b21apr14a-5	04/21/14	1615
03 SFRA-19	6010001	b21apr14a_2-13	04/22/14	1041
04 SFRA-19	6010001	b22apr14b4	04/22/14	1501

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6010	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010227		Matrix: SOLID
Client Sample: QC for batch 25710		
Client ID: MB for batch 25710		Prep Basis: As Received
Batch ID: 25712	Method: EPA Method 1613B	
Run Date: 04/21/2014 17:03	Analyst: JTF	Instrument: HRP763
Data File: b21apr14a-6		Dilution: 1
Prep Batch: 25710	Prep Method: SW846 3540C	
Prep Date: 20-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.192	pg/g	0.192	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.208	pg/g	0.208	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.318	pg/g	0.318	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.322	pg/g	0.322	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.328	pg/g	0.328	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.45	pg/g	0.450	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.708	pg/g	0.708	10.0
51207-31-9	2,3,7,8-TCDF	U	.22	pg/g	0.220	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.166	pg/g	0.160	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.154	pg/g	0.154	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.196	pg/g	0.196	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.184	pg/g	0.184	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.206	pg/g	0.206	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.324	pg/g	0.324	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.212	pg/g	0.212	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.384	pg/g	0.384	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.692	pg/g	0.692	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		166	200	pg/g	83.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		183	200	pg/g	91.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		139	200	pg/g	69.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		165	200	pg/g	82.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		145	200	pg/g	72.7	(23%-140%)
13C-OCDD		259	400	pg/g	64.9	(17%-157%)
13C-2,3,7,8-TCDF		178	200	pg/g	89.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		186	200	pg/g	92.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		180	200	pg/g	89.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		132	200	pg/g	66.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		164	200	pg/g	81.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		150	200	pg/g	75.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		139	200	pg/g	69.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		143	200	pg/g	71.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		125	200	pg/g	62.7	(26%-138%)
37Cl-2,3,7,8-TCDD		20.7	20.0	pg/g	104	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6010	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010228		Matrix: SOLID
Client Sample: QC for batch 25710		
Client ID: LCS for batch 25710		Prep Basis: As Received
Batch ID: 25712	Method: EPA Method 1613B	
Run Date: 04/21/2014 15:28	Analyst: JTF	Instrument: HRP763
Data File: b21apr14a-4		Dilution: 1
Prep Batch: 25710	Prep Method: SW846 3540C	
Prep Date: 20-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.6	pg/g	0.406	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.8	pg/g	0.520	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.3	pg/g	0.932	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		104	pg/g	0.918	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		103	pg/g	0.948	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		103	pg/g	1.33	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		194	pg/g	4.30	10.0
51207-31-9	2,3,7,8-TCDF		18.4	pg/g	0.368	1.00
57117-41-6	1,2,3,7,8-PeCDF		104	pg/g	0.618	5.00
57117-31-4	2,3,4,7,8-PeCDF		105	pg/g	0.628	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		104	pg/g	1.15	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		105	pg/g	1.10	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		103	pg/g	1.17	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		107	pg/g	1.85	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		106	pg/g	0.938	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		105	pg/g	1.70	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		207	pg/g	3.50	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		148	200	pg/g	73.9	(20%-175%)
13C-1,2,3,7,8-PeCDD		166	200	pg/g	82.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		124	200	pg/g	62.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		152	200	pg/g	76.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		133	200	pg/g	66.6	(22%-166%)
13C-OCDD		253	400	pg/g	63.3	(13%-199%)
13C-2,3,7,8-TCDF		160	200	pg/g	80.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		166	200	pg/g	82.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		162	200	pg/g	81.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		120	200	pg/g	59.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		149	200	pg/g	74.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		141	200	pg/g	70.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		130	200	pg/g	65.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		135	200	pg/g	67.5	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		122	200	pg/g	61.2	(20%-186%)
37Cl-2,3,7,8-TCDD		19.3	20.0	pg/g	96.4	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6010	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010229		Matrix: SOLID
Client Sample: QC for batch 25710		
Client ID: LCSD for batch 25710		Prep Basis: As Received
Batch ID: 25712	Method: EPA Method 1613B	
Run Date: 04/21/2014 16:15	Analyst: JTF	Instrument: HRP763
Data File: b21apr14a-5		Dilution: 1
Prep Batch: 25710	Prep Method: SW846 3540C	
Prep Date: 20-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		22.4	pg/g	0.230	1.00
40321-76-4	1,2,3,7,8-PeCDD		111	pg/g	0.544	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		104	pg/g	0.888	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		109	pg/g	0.856	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		116	pg/g	0.892	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	1.21	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		213	pg/g	4.34	10.0
51207-31-9	2,3,7,8-TCDF		19.7	pg/g	0.244	1.00
57117-41-6	1,2,3,7,8-PeCDF		107	pg/g	0.580	5.00
57117-31-4	2,3,4,7,8-PeCDF		110	pg/g	0.604	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		108	pg/g	0.868	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		111	pg/g	0.810	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		110	pg/g	0.880	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		110	pg/g	1.41	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		112	pg/g	0.806	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		105	pg/g	1.44	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		220	pg/g	2.84	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		145	200	pg/g	72.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		161	200	pg/g	80.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		125	200	pg/g	62.6	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	78.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		143	200	pg/g	71.6	(22%-166%)
13C-OCDD		260	400	pg/g	65.1	(13%-199%)
13C-2,3,7,8-TCDF		165	200	pg/g	82.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		163	200	pg/g	81.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		161	200	pg/g	80.7	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		125	200	pg/g	62.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		151	200	pg/g	75.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		142	200	pg/g	71.2	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		131	200	pg/g	65.3	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		140	200	pg/g	70.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		135	200	pg/g	67.4	(20%-186%)
37Cl-2,3,7,8-TCDD		19.7	20.0	pg/g	98.3	(31%-191%)

Comments:

April 25, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6023

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 22, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

ACTIVITY LEADER(Print) <i>Heath Smith, Dave Kinosh</i>	NAME OF SURVEY OR ACTIVITY <i>Strecker Forest RA</i>	DATE OF COLLECTION <i>21</i> / <i>4</i> / <i>14</i> DAY MONTH YEAR	SHEET <i>1</i> of <i>1</i>
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SAMPLE NUMBER	TYPE OF CONTAINERS				SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	CUBITAINER	BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	water	soil	sediment	other	
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER								
<i>15:55 SFRA-20</i>		<i>402</i> X				X			<i>1613 B Dioxin/Furans 20 g sample each - use 7.5g for extraction & 5g for dry wt determination</i>
<i>16:30 ↓ -21</i>		↓				↓			
<i>16:40 ↓ -22</i>		↓				↓			
<i>OK 4-2-14</i>									

DESCRIPTION OF SHIPMENT <i>3</i> PIECE(S) CONSISTING OF _____ BOX(ES) <i>1</i> ICE CHEST(S); OTHER _____	MODE OF SHIPMENT <input checked="" type="checkbox"/> COMMERCIAL CARRIER: <i>Fedex</i> <input type="checkbox"/> COURIER <input type="checkbox"/> SAMPLER CONVEYED <i>8042 3157 0940</i> (SHIPPING DOCUMENT NUMBER)
--	--

PERSONNEL CUSTODY RECORD				REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY (SAMPLER) <i>Dave Kinosh</i>	DATE <i>4-21-14</i>	TIME <i>17:35</i>	RECEIVED BY <i>[Signature]</i>	<i>Transport to Lab for Analysis</i>
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED			<input checked="" type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: Tetra Tech	Work Order: 6023
---------------------------	-------------------------

Received By: Mary Showalter	Date/Time Received: 22 APR 14 1015
------------------------------------	---

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			
Samples identified as Foreign Soil?			

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			
Samples < 2x background?			

* Notify RSO of any responses in this column immediately.

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?			<input checked="" type="checkbox"/>	Preservation Method: ice bags blue ice dry ice none other(describe) 7.2°
4 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
6 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
7 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
8 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: Date 22 APR 14

Subject: RE: CFA receipt 22-APR-14
From: Dave Kinroth <davekinroth@charter.net>
Date: 4/22/2014 2:58 PM
To: Cynde Larkins <cynde.larkins@cfanalytical.com>

Please proceed with the extraction and analysis.

G. David Kinroth, CHMM
Regional Manager
EPA Reg. 7 START Haz. Waste Specialist
Seagull Environmental Technologies, Inc.
Woman-Owned, 8(a) Firm
Phone/Fax: (314) 395-3157
Mobile: (314) 517-6798
Emails: dkinroth@seagullenvirotech.com
davekinroth@charter.net

On Tue, Apr 22, 2014 at 11:11 AM, Cynde Larkins wrote:

Mr. Kinroth,

The samples arrived today in good condition. They were measured at 7.2°C, however. We will need your permission to continue with extraction and analysis since they were out of the recommended temperature range upon receipt.

Thank you,

--
Cynde Larkins
Project Manager Assistant
Cape Fear Analytical
3306 Kitty Hawk Road
Suite 120
Wilmington, NC 28405
(910) 795-0421

How was your customer experience? Customer service is a high priority for us, so we listen to what our customers have to say! Thank you for taking time to email us your thoughts and opinions at feedback@cfanalytical.com

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High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6023**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25730
Clean Up Batch Number: 25729
Extraction Batch Number: 25728

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6023001	SFRA-20
6023002	SFRA-21
6023003	SFRA-22
12010243	Method Blank (MB)
12010244	Laboratory Control Sample (LCS)
12010245	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

Sample 6023001 (SFRA-20)- Batch 25730 was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6023 CFA Work Order: 6023


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 25 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6023	Client: TETR001	Project: TETR00114
Lab Sample ID: 6023001	Date Collected: 04/21/2014 15:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/22/2014 10:15	%Moisture: 21.4
Client ID: SFRA-20		Prep Basis: Dry Weight
Batch ID: 25730	Method: EPA Method 1613B	
Run Date: 04/24/2014 16:22	Analyst: JTF	Instrument: HRP750
Data File: A24APR14B-5		Dilution: 2
Prep Batch: 25728	Prep Method: SW846 3540C	
Prep Date: 22-APR-14	Prep Aliquot: 1.1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		5830	pg/g	3.54	23.1
40321-76-4	1,2,3,7,8-PeCDD	J	8.79	pg/g	3.12	116
39227-28-6	1,2,3,4,7,8-HxCDD	J	26.9	pg/g	5.09	116
57653-85-7	1,2,3,6,7,8-HxCDD	J	40.9	pg/g	5.67	116
19408-74-3	1,2,3,7,8,9-HxCDD	J	20.9	pg/g	5.71	116
35822-46-9	1,2,3,4,6,7,8-HpCDD		708	pg/g	11.1	116
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8980	pg/g	32.4	231
51207-31-9	2,3,7,8-TCDF		39.6	pg/g	6.31	23.1
57117-41-6	1,2,3,7,8-PeCDF	J	46.0	pg/g	5.76	116
57117-31-4	2,3,4,7,8-PeCDF	J	6.50	pg/g	5.41	116
70648-26-9	1,2,3,4,7,8-HxCDF	J	17.3	pg/g	4.21	116
57117-44-9	1,2,3,6,7,8-HxCDF	J	10.2	pg/g	4.07	116
60851-34-5	2,3,4,6,7,8-HxCDF	J	10.6	pg/g	4.07	116
72918-21-9	1,2,3,7,8,9-HxCDF	U	6.43	pg/g	6.43	116
67562-39-4	1,2,3,4,6,7,8-HpCDF		158	pg/g	3.26	116
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	13.2	pg/g	5.23	116
39001-02-0	1,2,3,4,6,7,8,9-OCDF		430	pg/g	8.33	231

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1540	2310	pg/g	66.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1650	2310	pg/g	71.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1640	2310	pg/g	70.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1580	2310	pg/g	68.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1760	2310	pg/g	76.2	(23%-140%)
13C-OCDD		3260	4630	pg/g	70.5	(17%-157%)
13C-2,3,7,8-TCDF		1530	2310	pg/g	66.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1540	2310	pg/g	66.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1660	2310	pg/g	71.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1610	2310	pg/g	69.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1490	2310	pg/g	64.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1590	2310	pg/g	68.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1400	2310	pg/g	60.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1610	2310	pg/g	69.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1590	2310	pg/g	68.8	(26%-138%)
37Cl-2,3,7,8-TCDD		209	231	pg/g	90.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6023	Client: TETR001	Project: TETR00114
Lab Sample ID: 6023001	Date Collected: 04/21/2014 15:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/22/2014 10:15	%Moisture: 21.4
Client ID: SFRA-20		Prep Basis: Dry Weight
Batch ID: 25730	Method: EPA Method 1613B	
Run Date: 04/25/2014 13:03	Analyst: JTF	Instrument: HRP750
Data File: A25APR14C-4		Dilution: 2
Prep Batch: 25728	Prep Method: SW846 3540C	
Prep Date: 22-APR-14	Prep Aliquot: 1.1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		42.5	pg/g	4.97	23.1

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6023	Client: TETR001	Project: TETR00114
Lab Sample ID: 6023002	Date Collected: 04/21/2014 16:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/22/2014 10:15	%Moisture: 15.6
Client ID: SFRA-21		Prep Basis: Dry Weight
Batch ID: 25730	Method: EPA Method 1613B	
Run Date: 04/24/2014 17:09	Analyst: JTF	Instrument: HRP750
Data File: A24APR14B-6		Dilution: 1
Prep Batch: 25728	Prep Method: SW846 3540C	
Prep Date: 22-APR-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1500	pg/g	1.48	10.2
40321-76-4	1,2,3,7,8-PeCDD	U	2.96	pg/g	2.96	51.0
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.57	pg/g	3.57	51.0
57653-85-7	1,2,3,6,7,8-HxCDD	J	9.98	pg/g	3.98	51.0
19408-74-3	1,2,3,7,8,9-HxCDD	J	5.78	pg/g	4.02	51.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		202	pg/g	6.41	51.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5260	pg/g	9.02	102
51207-31-9	2,3,7,8-TCDF	J	9.15	pg/g	2.35	10.2
57117-41-6	1,2,3,7,8-PeCDF	U	1.39	pg/g	1.39	51.0
57117-31-4	2,3,4,7,8-PeCDF	U	2.61	pg/g	2.61	51.0
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.06	pg/g	1.66	51.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.27	pg/g	2.27	51.0
60851-34-5	2,3,4,6,7,8-HxCDF	J	3.59	pg/g	1.76	51.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.57	pg/g	2.57	51.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	32.5	pg/g	1.29	51.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.08	pg/g	2.12	51.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	67.0	pg/g	2.90	102

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1500	2040	pg/g	73.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1560	2040	pg/g	76.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1590	2040	pg/g	77.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1530	2040	pg/g	74.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1720	2040	pg/g	84.3	(23%-140%)
13C-OCDD		3320	4080	pg/g	81.3	(17%-157%)
13C-2,3,7,8-TCDF		1440	2040	pg/g	70.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1490	2040	pg/g	73.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1470	2040	pg/g	71.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1510	2040	pg/g	73.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1400	2040	pg/g	68.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1480	2040	pg/g	72.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1320	2040	pg/g	64.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1560	2040	pg/g	76.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1510	2040	pg/g	74.0	(26%-138%)
37Cl-2,3,7,8-TCDD		186	204	pg/g	91.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6023	Client: TETR001	Project: TETR00114
Lab Sample ID: 6023003	Date Collected: 04/21/2014 16:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/22/2014 10:15	%Moisture: 20.2
Client ID: SFRA-22		Prep Basis: Dry Weight
Batch ID: 25730	Method: EPA Method 1613B	
Run Date: 04/25/2014 10:52	Analyst: JTF	Instrument: HRP750
Data File: A25APR14A-3		Dilution: 1
Prep Batch: 25728	Prep Method: SW846 3540C	
Prep Date: 22-APR-14	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		218	pg/g	1.86	12.2
40321-76-4	1,2,3,7,8-PeCDD	U	3.12	pg/g	3.12	60.9
39227-28-6	1,2,3,4,7,8-HxCDD	J	11.3	pg/g	7.57	60.9
57653-85-7	1,2,3,6,7,8-HxCDD		84.5	pg/g	8.16	60.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	18.2	pg/g	8.37	60.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		4020	pg/g	17.3	60.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		45100	pg/g	17.2	122
51207-31-9	2,3,7,8-TCDF	U	3.36	pg/g	3.36	12.2
57117-41-6	1,2,3,7,8-PeCDF	J	11.3	pg/g	3.55	60.9
57117-31-4	2,3,4,7,8-PeCDF	U	3.68	pg/g	3.68	60.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	16.7	pg/g	5.23	60.9
57117-44-9	1,2,3,6,7,8-HxCDF	U	5.19	pg/g	5.19	60.9
60851-34-5	2,3,4,6,7,8-HxCDF	J	9.35	pg/g	5.11	60.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	7.4	pg/g	7.40	60.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		624	pg/g	6.57	60.9
55673-89-7	1,2,3,4,7,8,9-HpCDF		67.6	pg/g	10.4	60.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		4870	pg/g	10.3	122

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1910	2430	pg/g	78.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2030	2430	pg/g	83.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1960	2430	pg/g	80.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1870	2430	pg/g	76.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2100	2430	pg/g	86.5	(23%-140%)
13C-OCDD		4370	4870	pg/g	89.7	(17%-157%)
13C-2,3,7,8-TCDF		1830	2430	pg/g	75.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	2430	pg/g	78.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1880	2430	pg/g	77.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1850	2430	pg/g	75.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1710	2430	pg/g	70.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1800	2430	pg/g	73.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1650	2430	pg/g	67.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1840	2430	pg/g	75.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1810	2430	pg/g	74.2	(26%-138%)
37Cl-2,3,7,8-TCDD		225	243	pg/g	92.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6023

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010243	MB for batch 25728	13C-2,3,7,8-TCDD		70.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		67.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		71.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		65.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		66.3	(23%-140%)
		13C-OCDD		53.3	(17%-157%)
		13C-2,3,7,8-TCDF		72.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		65.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		65.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		63.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		67.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		62.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		66.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		58.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		93.0	(35%-197%)
12010244	LCS for batch 25728	13C-2,3,7,8-TCDD		75.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		80.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.0	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		75.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.2	(22%-166%)
		13C-OCDD		83.1	(13%-199%)
		13C-2,3,7,8-TCDF		75.4	(22%-152%)
		13C-1,2,3,7,8-PeCDF		75.1	(21%-192%)
		13C-2,3,4,7,8-PeCDF		75.7	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		74.2	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		70.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		72.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		66.0	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.1	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		75.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		94.7	(31%-191%)
12010245	LCSD for batch 25728	13C-2,3,7,8-TCDD		69.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		72.0	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		73.6	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		68.9	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		76.7	(22%-166%)
		13C-OCDD		75.7	(13%-199%)
		13C-2,3,7,8-TCDF		69.4	(22%-152%)
		13C-1,2,3,7,8-PeCDF		70.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		69.0	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		67.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		64.3	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		66.9	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		61.4	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		72.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		69.0	(20%-186%)
		37Cl-2,3,7,8-TCDD		91.3	(31%-191%)
6023001	SFRA-20	13C-2,3,7,8-TCDD		66.5	D (25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6023

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6023001	SFRA-20	13C-1,2,3,7,8-PeCDD		71.4 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		70.8 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		68.5 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.2 D	(23%-140%)
		13C-OCDD		70.5 D	(17%-157%)
		13C-2,3,7,8-TCDF		66.3 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		66.4 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		71.7 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		69.5 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		64.2 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		68.8 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		60.4 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		69.5 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		68.8 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		90.3 D	(35%-197%)
6023002	SFRA-21	13C-2,3,7,8-TCDD		73.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		76.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		74.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.3	(23%-140%)
		13C-OCDD		81.3	(17%-157%)
		13C-2,3,7,8-TCDF		70.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		73.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		71.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		68.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		72.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		64.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.0	(26%-138%)
37Cl-2,3,7,8-TCDD		91.2	(35%-197%)		
6023003	SFRA-22	13C-2,3,7,8-TCDD		78.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.5	(23%-140%)
		13C-OCDD		89.7	(17%-157%)
		13C-2,3,7,8-TCDF		75.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		78.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		77.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		75.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		73.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		67.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.2	(26%-138%)
37Cl-2,3,7,8-TCDD		92.3	(35%-197%)		

* Recovery outside Acceptance Limits

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6023

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits
Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6023

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25728

Matrix: SOLID

Lab Sample ID: 12010244

Instrument: HRP750

Analysis Date: 04/24/2014 14:46

Dilution: 1

Analyst: JTF

Prep Batch ID: 25728

Batch ID: 25730

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.6	103	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	97.9	97.9	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	98.4	98.4	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	101	101	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	106	106	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	100	100	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	208	104	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.1	95.3	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	102	102	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	100	100	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	102	102	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	103	103	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	103	103	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	108	108	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	101	101	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	101	101	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	193	96.7	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6023

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25728

Matrix: SOLID

Lab Sample ID: 12010245

Instrument: HRP750

Analysis Date: 04/24/2014 15:34

Dilution: 1

Analyst: JTF

Prep Batch ID: 25728

Batch ID: 25730

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.9	104	67-158	1.28	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	101	101	70-142	2.63	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	98.7	98.7	70-164	0.343	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	102	102	76-134	0.942	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	107	107	64-162	0.186	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140	1.21	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	207	104	78-144	0.597	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.3	96.3	75-158	1.06	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	102	102	80-134	0.405	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	101	101	68-160	0.949	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	105	105	72-134	3.11	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	105	105	84-130	2.11	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	104	104	70-156	0.455	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	110	110	78-130	1.27	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	102	102	82-122	1.09	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	103	103	78-138	1.96	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	193	96.5	63-170	0.137	0-20

Method Blank Summary

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SDG Number: 6023
Client ID: MB for batch 25728
Lab Sample ID: 12010243
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 22-APR-14

Matrix: SOLID
Data File: A24APR14A-2
Analyzed: 04/24/14 09:38

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25728	12010244	A24APR14B-3	04/24/14	1446
02 LCSD for batch 25728	12010245	A24APR14B-4	04/24/14	1534
03 SFRA-20	6023001	A24APR14B-5	04/24/14	1622
04 SFRA-21	6023002	A24APR14B-6	04/24/14	1709
05 SFRA-22	6023003	A25APR14A-3	04/25/14	1052
06 SFRA-20	6023001	A25APR14C-4	04/25/14	1303

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6023	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010243		Matrix: SOLID
Client Sample: QC for batch 25728		
Client ID: MB for batch 25728		Prep Basis: As Received
Batch ID: 25730	Method: EPA Method 1613B	
Run Date: 04/24/2014 09:38	Analyst: JTF	Instrument: HRP750
Data File: A24APR14A-2		Dilution: 1
Prep Batch: 25728	Prep Method: SW846 3540C	
Prep Date: 22-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.0924	pg/g	0.0924	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.167	pg/g	0.167	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.352	pg/g	0.352	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.402	pg/g	0.402	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.4	pg/g	0.400	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.36	pg/g	0.360	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.778	pg/g	0.264	10.0
51207-31-9	2,3,7,8-TCDF	U	.0684	pg/g	0.0684	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.228	pg/g	0.141	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.246	pg/g	0.134	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.276	pg/g	0.276	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.332	pg/g	0.278	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.368	pg/g	0.368	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.408	pg/g	0.408	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.314	pg/g	0.086	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.312	pg/g	0.151	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.404	pg/g	0.248	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		141	200	pg/g	70.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		136	200	pg/g	67.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		143	200	pg/g	71.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		132	200	pg/g	65.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		133	200	pg/g	66.3	(23%-140%)
13C-OCDD		213	400	pg/g	53.3	(17%-157%)
13C-2,3,7,8-TCDF		144	200	pg/g	72.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		132	200	pg/g	65.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		132	200	pg/g	65.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		141	200	pg/g	70.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		127	200	pg/g	63.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		135	200	pg/g	67.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		125	200	pg/g	62.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		133	200	pg/g	66.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		117	200	pg/g	58.6	(26%-138%)
37Cl-2,3,7,8-TCDD		18.6	20.0	pg/g	93.0	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6023	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010244		Matrix: SOLID
Client Sample: QC for batch 25728		
Client ID: LCS for batch 25728		Prep Basis: As Received
Batch ID: 25730	Method: EPA Method 1613B	
Run Date: 04/24/2014 14:46	Analyst: JTF	Instrument: HRP750
Data File: A24APR14B-3		Dilution: 1
Prep Batch: 25728	Prep Method: SW846 3540C	
Prep Date: 22-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.6	pg/g	0.099	1.00
40321-76-4	1,2,3,7,8-PeCDD		97.9	pg/g	0.165	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.4	pg/g	0.404	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		101	pg/g	0.448	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		106	pg/g	0.454	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		100	pg/g	0.454	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		208	pg/g	0.820	10.0
51207-31-9	2,3,7,8-TCDF		19.1	pg/g	0.112	1.00
57117-41-6	1,2,3,7,8-PeCDF		102	pg/g	0.177	5.00
57117-31-4	2,3,4,7,8-PeCDF		100	pg/g	0.178	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		102	pg/g	0.542	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		103	pg/g	0.512	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		103	pg/g	0.536	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		108	pg/g	0.790	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.216	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		101	pg/g	0.358	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		193	pg/g	0.604	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		151	200	pg/g	75.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		161	200	pg/g	80.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	78.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		150	200	pg/g	75.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.2	(22%-166%)
13C-OCDD		333	400	pg/g	83.1	(13%-199%)
13C-2,3,7,8-TCDF		151	200	pg/g	75.4	(22%-152%)
13C-1,2,3,7,8-PeCDF		150	200	pg/g	75.1	(21%-192%)
13C-2,3,4,7,8-PeCDF		151	200	pg/g	75.7	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		148	200	pg/g	74.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		141	200	pg/g	70.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		145	200	pg/g	72.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		132	200	pg/g	66.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		156	200	pg/g	78.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		151	200	pg/g	75.4	(20%-186%)
37Cl-2,3,7,8-TCDD		18.9	20.0	pg/g	94.7	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6023	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010245		Matrix: SOLID
Client Sample: QC for batch 25728		
Client ID: LCSD for batch 25728		Prep Basis: As Received
Batch ID: 25730	Method: EPA Method 1613B	
Run Date: 04/24/2014 15:34	Analyst: JTF	Instrument: HRP750
Data File: A24APR14B-4		Dilution: 1
Prep Batch: 25728	Prep Method: SW846 3540C	
Prep Date: 22-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.108	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.256	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.7	pg/g	0.262	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	0.286	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		107	pg/g	0.290	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	0.428	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		207	pg/g	0.792	10.0
51207-31-9	2,3,7,8-TCDF		19.3	pg/g	0.123	1.00
57117-41-6	1,2,3,7,8-PeCDF		102	pg/g	0.236	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.240	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		105	pg/g	0.350	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		105	pg/g	0.326	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		104	pg/g	0.356	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		110	pg/g	0.496	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		102	pg/g	0.288	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		103	pg/g	0.470	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		193	pg/g	0.410	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		140	200	pg/g	69.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		144	200	pg/g	72.0	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		147	200	pg/g	73.6	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		138	200	pg/g	68.9	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		153	200	pg/g	76.7	(22%-166%)
13C-OCDD		303	400	pg/g	75.7	(13%-199%)
13C-2,3,7,8-TCDF		139	200	pg/g	69.4	(22%-152%)
13C-1,2,3,7,8-PeCDF		142	200	pg/g	70.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		138	200	pg/g	69.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		135	200	pg/g	67.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		129	200	pg/g	64.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		134	200	pg/g	66.9	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		123	200	pg/g	61.4	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		144	200	pg/g	72.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		138	200	pg/g	69.0	(20%-186%)
37Cl-2,3,7,8-TCDD		18.3	20.0	pg/g	91.3	(31%-191%)

Comments:

April 29, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6049

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 24, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

ACTIVITY LEADER(Print) Heath Smith, Dave Kinosh	NAME OF SURVEY OR ACTIVITY Strecker Forest RA	DATE OF COLLECTION 23 / 4 / 14 DAY MONTH YEAR	SHEET 1 of 1
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SAMPLE NUMBER	TYPE OF CONTAINERS				VOA SET (2 VIALS EA)	SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)	
	CUBITAINER	BOTTLE	BOTTLE	BOTTLE		water	soil	sediment	dust		other
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
16:15 SFRA-23		4oz				X					1613B Analysis - 20g Soil - use 5g for extraction & 5g for dry wt determination
16:25 ↓ -24		↓				↓					
<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p><i>Time</i></p> <p>16:15</p> <p>16:25</p> </div> <div style="width: 40%; text-align: center;"> <p><i>Collection time taken from sample labels at CFA.</i></p> <p><i>temp. upon receipt = 4.7°C</i></p> </div> <div style="width: 15%; text-align: center;"> <p><i>Dave Kinosh</i></p> <p><i>4/23/14</i></p> </div> </div>											

DESCRIPTION OF SHIPMENT 2 PIECE(S) CONSISTING OF _____ BOX(ES) 1 ICE CHEST(S); OTHER _____	MODE OF SHIPMENT <input checked="" type="checkbox"/> COMMERCIAL CARRIER: _____ <input type="checkbox"/> COURIER <input type="checkbox"/> SAMPLER CONVEYED (SHIPPING DOCUMENT NUMBER) _____
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PERSONNEL CUSTODY RECORD				
RELINQUISHED BY (SAMPLER)	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<i>Dave Kinosh</i>	<i>4-23-14</i>	<i>17:55</i>	<i>Cynde Yachurs</i>	<i>24 APR 0950 Transport to Lab for Analysis</i>
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order:
Received By: Cynde Larkins	Date/Time Received: 24 APR 14 0950

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	✓			
3 Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bag blue ice dry ice none other(describe) 4.7°C
4 Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5 Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
6 Samples received within holding time?	✓			Sample IDs, tests affected:
7 Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
8 Date & time of COC match date & time on containers?				Sample IDs, containers affected: ✓ Time not noted on COC, taken from sample labels @ CFA.
9 Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
10 COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: **CL** Date: **24 APR 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6049**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25767
Clean Up Batch Number: 25766
Extraction Batch Number: 25765

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6049001	SFRA-23
6049002	SFRA-24
12010287	Method Blank (MB)
12010288	Laboratory Control Sample (LCS)
12010289	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

One extraction standard recovered below acceptance criteria within 1% of the lower control limit. This low recovery is due to matrix interference which caused a lock mass dip below 13C-123678-HxCDD. 6049001 (SFRA-23)- Batch 25767.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

The following NCR was generated for this SDG: 644460 6049001 (SFRA-23)- Batch 25767.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6049 CFA Work Order: 6049


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 29 APR 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6049	Client: TETR001	Project: TETR00114
Lab Sample ID: 6049001	Date Collected: 04/23/2014 16:15	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/24/2014 09:50	%Moisture: 19.6
Client ID: SFRA-23		Prep Basis: Dry Weight
Batch ID: 25767	Method: EPA Method 1613B	
Run Date: 04/26/2014 00:28	Analyst: JTF	Instrument: HRP750
Data File: A25APR14B-12		Dilution: 1
Prep Batch: 25765	Prep Method: SW846 3540C	
Prep Date: 24-APR-14	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4710	pg/g	2.21	12.1
40321-76-4	1,2,3,7,8-PeCDD	J	3.29	pg/g	2.66	60.4
39227-28-6	1,2,3,4,7,8-HxCDD	J	5.63	pg/g	4.69	60.4
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	59.7	pg/g	14.6	60.4
19408-74-3	1,2,3,7,8,9-HxCDD	JQ	23.3	pg/g	8.07	60.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		547	pg/g	6.31	60.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7320	pg/g	18.5	121
51207-31-9	2,3,7,8-TCDF		25.0	pg/g	2.61	12.1
57117-41-6	1,2,3,7,8-PeCDF	J	6.38	pg/g	1.93	60.4
57117-31-4	2,3,4,7,8-PeCDF	J	4.40	pg/g	2.12	60.4
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.26	pg/g	3.67	60.4
57117-44-9	1,2,3,6,7,8-HxCDF	J	4.64	pg/g	3.77	60.4
60851-34-5	2,3,4,6,7,8-HxCDF	J	7.27	pg/g	4.57	60.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	6.5	pg/g	6.50	60.4
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.0	pg/g	0.466	60.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	7.90	pg/g	0.788	60.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		237	pg/g	3.87	121

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1700	2420	pg/g	70.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1550	2420	pg/g	64.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1760	2420	pg/g	72.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	668	2420	pg/g	27.6 *	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2720	2420	pg/g	112	(23%-140%)
13C-OCDD		5880	4830	pg/g	122	(17%-157%)
13C-2,3,7,8-TCDF		1820	2420	pg/g	75.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1560	2420	pg/g	64.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1480	2420	pg/g	61.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2130	2420	pg/g	88.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2050	2420	pg/g	85.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2420	pg/g	79.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2010	2420	pg/g	83.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2310	2420	pg/g	95.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2420	2420	pg/g	100	(26%-138%)
37Cl-2,3,7,8-TCDD		215	242	pg/g	89.1	(35%-197%)

Comments:

- J** Value is estimated
- Q** Quantitative Interference
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6049	Client: TETR001	Project: TETR00114
Lab Sample ID: 6049001	Date Collected: 04/23/2014 16:15	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/24/2014 09:50	%Moisture: 19.6
Client ID: SFRA-23		Prep Basis: Dry Weight
Batch ID: 25767	Method: EPA Method 1613B	
Run Date: 04/28/2014 15:12	Analyst: JTF	Instrument: HRP750
Data File: A28APR14A-5		Dilution: 1
Prep Batch: 25765	Prep Method: SW846 3540C	
Prep Date: 24-APR-14	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		23.4	pg/g	5.15	12.1

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6049	Client: TETR001	Project: TETR00114
Lab Sample ID: 6049002	Date Collected: 04/23/2014 16:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/24/2014 09:50	%Moisture: 20.2
Client ID: SFRA-24		Prep Basis: Dry Weight
Batch ID: 25767	Method: EPA Method 1613B	
Run Date: 04/26/2014 01:16	Analyst: JTF	Instrument: HRP750
Data File: A25APR14B-13		Dilution: 1
Prep Batch: 25765	Prep Method: SW846 3540C	
Prep Date: 24-APR-14	Prep Aliquot: 1.34 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		416	pg/g	1.11	9.36
40321-76-4	1,2,3,7,8-PeCDD	U	1.45	pg/g	1.45	46.8
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.09	pg/g	2.32	46.8
57653-85-7	1,2,3,6,7,8-HxCDD	J	7.54	pg/g	2.38	46.8
19408-74-3	1,2,3,7,8,9-HxCDD	J	4.77	pg/g	2.51	46.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		308	pg/g	5.39	46.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7700	pg/g	13.0	93.6
51207-31-9	2,3,7,8-TCDF	J	3.59	pg/g	1.73	9.36
57117-41-6	1,2,3,7,8-PeCDF	J	6.23	pg/g	1.76	46.8
57117-31-4	2,3,4,7,8-PeCDF	U	1.84	pg/g	1.84	46.8
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.26	pg/g	3.26	46.8
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.41	pg/g	1.41	46.8
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.59	pg/g	1.36	46.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.97	pg/g	1.97	46.8
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	45.9	pg/g	0.460	46.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.97	pg/g	0.711	46.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		231	pg/g	4.10	93.6

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1320	1870	pg/g	70.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1350	1870	pg/g	72.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1370	1870	pg/g	73.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1330	1870	pg/g	70.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1530	1870	pg/g	81.5	(23%-140%)
13C-OCDD		3150	3740	pg/g	84.1	(17%-157%)
13C-2,3,7,8-TCDF		1380	1870	pg/g	73.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1330	1870	pg/g	71.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1260	1870	pg/g	67.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1330	1870	pg/g	70.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1290	1870	pg/g	69.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1300	1870	pg/g	69.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1250	1870	pg/g	66.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1400	1870	pg/g	75.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1410	1870	pg/g	75.6	(26%-138%)
37Cl-2,3,7,8-TCDD		154	187	pg/g	82.4	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6049

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010288	LCS for batch 25765	13C-2,3,7,8-TCDD		55.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		59.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		56.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		56.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		63.6	(22%-166%)
		13C-OCDD		56.5	(13%-199%)
		13C-2,3,7,8-TCDF		59.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		57.3	(21%-192%)
		13C-2,3,4,7,8-PeCDF		57.3	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		55.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		54.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		56.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		50.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		58.3	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		57.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		84.0	(31%-191%)
		12010289	LCSD for batch 25765	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				79.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD				73.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD				71.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD				77.6	(22%-166%)
13C-OCDD				68.8	(13%-199%)
13C-2,3,7,8-TCDF				75.2	(22%-152%)
13C-1,2,3,7,8-PeCDF				77.1	(21%-192%)
13C-2,3,4,7,8-PeCDF				79.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF				73.5	(19%-202%)
13C-1,2,3,6,7,8-HxCDF				70.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF				73.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF				65.4	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF				74.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF				71.8	(20%-186%)
37Cl-2,3,7,8-TCDD				83.8	(31%-191%)
12010287	MB for batch 25765			13C-2,3,7,8-TCDD	
		13C-1,2,3,7,8-PeCDD		77.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		71.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		81.9	(23%-140%)
		13C-OCDD		74.5	(17%-157%)
		13C-2,3,7,8-TCDF		73.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		72.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		76.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		71.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		75.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		65.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		83.7	(35%-197%)
		6049001	SFRA-23	13C-2,3,7,8-TCDD	

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6049

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6049001	SFRA-23	13C-1,2,3,7,8-PeCDD		64.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		72.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		27.6 *	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		112	(23%-140%)
		13C-OCDD		122	(17%-157%)
		13C-2,3,7,8-TCDF		75.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		64.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		61.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		88.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		85.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		95.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		100	(26%-138%)
		37Cl-2,3,7,8-TCDD		89.1	(35%-197%)
6049002	SFRA-24	13C-2,3,7,8-TCDD		70.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		72.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		70.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		81.5	(23%-140%)
		13C-OCDD		84.1	(17%-157%)
		13C-2,3,7,8-TCDF		73.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		71.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		67.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		69.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		75.6	(26%-138%)
37Cl-2,3,7,8-TCDD		82.4	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6049

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25765

Matrix: SOLID

Lab Sample ID: 12010288

Instrument: HRP750

Analysis Date: 04/25/2014 22:04

Dilution: 1

Analyst: JTF

Prep Batch ID: 25765

Batch ID: 25767

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.7	104	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	99.7	99.7	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	98.0	98	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	102	102	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	109	109	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	100	100	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	203	102	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.5	97.7	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	101	101	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	99.7	99.7	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	100	100	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	100	100	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	101	101	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	108	108	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	101	101	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	99.2	99.2	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	200	100	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6049

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25765

Matrix: SOLID

Lab Sample ID: 12010289

Instrument: HRP750

Analysis Date: 04/25/2014 22:52

Dilution: 1

Analyst: JTF

Prep Batch ID: 25765

Batch ID: 25767

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.0	105	67-158	1.02	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	102	102	70-142	1.78	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	97.6	97.6	70-164	0.362	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	104	104	76-134	1.80	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	103	103	64-162	5.34	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	99.8	99.8	70-140	0.669	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	204	102	78-144	0.323	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.9	94.3	75-158	3.53	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	98.5	98.5	80-134	2.40	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	99.1	99.1	68-160	0.668	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	99.5	99.5	72-134	0.538	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	103	103	84-130	2.75	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	101	101	70-156	0.599	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	107	107	78-130	0.352	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	99.4	99.4	82-122	1.16	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	99.3	99.3	78-138	0.0927	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	197	98.4	63-170	1.71	0-20

Method Blank Summary

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SDG Number: 6049
Client ID: MB for batch 25765
Lab Sample ID: 12010287
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 24-APR-14

Matrix: SOLID
Data File: A25APR14B-11
Analyzed: 04/25/14 23:40

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25765	12010288	A25APR14B-9	04/25/14	2204
02 LCSD for batch 25765	12010289	A25APR14B-10	04/25/14	2252
03 SFRA-23	6049001	A25APR14B-12	04/26/14	0028
04 SFRA-24	6049002	A25APR14B-13	04/26/14	0116
05 SFRA-23	6049001	A28APR14A-5	04/28/14	1512

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6049	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010287		Matrix: SOLID
Client Sample: QC for batch 25765		
Client ID: MB for batch 25765		Prep Basis: As Received
Batch ID: 25767	Method: EPA Method 1613B	
Run Date: 04/25/2014 23:40	Analyst: JTF	Instrument: HRP750
Data File: A25APR14B-11		Dilution: 1
Prep Batch: 25765	Prep Method: SW846 3540C	
Prep Date: 24-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.0926	pg/g	0.0926	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.132	pg/g	0.100	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.153	pg/g	0.153	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.158	pg/g	0.158	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.165	pg/g	0.165	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.248	pg/g	0.248	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.864	pg/g	0.366	10.0
51207-31-9	2,3,7,8-TCDF	U	.106	pg/g	0.106	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.134	pg/g	0.0708	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.112	pg/g	0.0728	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.142	pg/g	0.142	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.142	pg/g	0.142	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.15	pg/g	0.150	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.226	pg/g	0.226	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.106	pg/g	0.0292	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.174	pg/g	0.174	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.336	pg/g	0.336	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		140	200	pg/g	70.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		154	200	pg/g	77.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		143	200	pg/g	71.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		147	200	pg/g	73.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		164	200	pg/g	81.9	(23%-140%)
13C-OCDD		298	400	pg/g	74.5	(17%-157%)
13C-2,3,7,8-TCDF		147	200	pg/g	73.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		144	200	pg/g	72.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		153	200	pg/g	76.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		146	200	pg/g	73.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		143	200	pg/g	71.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		150	200	pg/g	75.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		131	200	pg/g	65.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		155	200	pg/g	77.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		149	200	pg/g	74.4	(26%-138%)
37Cl-2,3,7,8-TCDD		16.7	20.0	pg/g	83.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6049	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010288		Matrix: SOLID
Client Sample: QC for batch 25765		
Client ID: LCS for batch 25765		Prep Basis: As Received
Batch ID: 25767	Method: EPA Method 1613B	
Run Date: 04/25/2014 22:04	Analyst: JTF	Instrument: HRP750
Data File: A25APR14B-9		Dilution: 1
Prep Batch: 25765	Prep Method: SW846 3540C	
Prep Date: 24-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.7	pg/g	0.119	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.7	pg/g	0.204	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.0	pg/g	0.304	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	0.326	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		109	pg/g	0.334	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		100	pg/g	0.470	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		203	pg/g	0.810	10.0
51207-31-9	2,3,7,8-TCDF		19.5	pg/g	0.126	1.00
57117-41-6	1,2,3,7,8-PeCDF		101	pg/g	0.236	5.00
57117-31-4	2,3,4,7,8-PeCDF		99.7	pg/g	0.232	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		100	pg/g	0.374	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		100	pg/g	0.374	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		101	pg/g	0.376	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		108	pg/g	0.570	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.530	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.2	pg/g	0.842	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		200	pg/g	0.952	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		112	200	pg/g	55.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		119	200	pg/g	59.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		112	200	pg/g	56.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		112	200	pg/g	56.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		127	200	pg/g	63.6	(22%-166%)
13C-OCDD		226	400	pg/g	56.5	(13%-199%)
13C-2,3,7,8-TCDF		119	200	pg/g	59.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		115	200	pg/g	57.3	(21%-192%)
13C-2,3,4,7,8-PeCDF		115	200	pg/g	57.3	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		112	200	pg/g	55.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		109	200	pg/g	54.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		113	200	pg/g	56.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		102	200	pg/g	50.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		117	200	pg/g	58.3	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		115	200	pg/g	57.4	(20%-186%)
37Cl-2,3,7,8-TCDD		16.8	20.0	pg/g	84.0	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6049	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010289		Matrix: SOLID
Client Sample: QC for batch 25765		
Client ID: LCSD for batch 25765		Prep Basis: As Received
Batch ID: 25767	Method: EPA Method 1613B	
Run Date: 04/25/2014 22:52	Analyst: JTF	Instrument: HRP750
Data File: A25APR14B-10		Dilution: 1
Prep Batch: 25765	Prep Method: SW846 3540C	
Prep Date: 24-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.0	pg/g	0.0984	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.178	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		97.6	pg/g	0.378	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		104	pg/g	0.418	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		103	pg/g	0.424	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.8	pg/g	0.424	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		204	pg/g	0.718	10.0
51207-31-9	2,3,7,8-TCDF		18.9	pg/g	0.136	1.00
57117-41-6	1,2,3,7,8-PeCDF		98.5	pg/g	0.248	5.00
57117-31-4	2,3,4,7,8-PeCDF		99.1	pg/g	0.234	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		99.5	pg/g	0.382	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		103	pg/g	0.382	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		101	pg/g	0.390	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		107	pg/g	0.602	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		99.4	pg/g	0.434	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.3	pg/g	0.714	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		197	pg/g	1.01	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		142	200	pg/g	71.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		159	200	pg/g	79.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		148	200	pg/g	73.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		143	200	pg/g	71.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		155	200	pg/g	77.6	(22%-166%)
13C-OCDD		275	400	pg/g	68.8	(13%-199%)
13C-2,3,7,8-TCDF		150	200	pg/g	75.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		154	200	pg/g	77.1	(21%-192%)
13C-2,3,4,7,8-PeCDF		160	200	pg/g	79.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		147	200	pg/g	73.5	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		141	200	pg/g	70.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		146	200	pg/g	73.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		131	200	pg/g	65.4	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		149	200	pg/g	74.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		144	200	pg/g	71.8	(20%-186%)
37Cl-2,3,7,8-TCDD		16.8	20.0	pg/g	83.8	(31%-191%)

Comments:

May 01, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6066

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 29, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: _____ of _____
 Project #: _____
 CFA Quote #: _____
 COC Number (1): _____
 PO Number: _____

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number: _____
 Phone #: 314-577-6798 / 811e-225-2331
 6066

Client Name: Tetra Tech Inc. Project/Site Name: Strecker Forest Removal Action
 Address: 20 Jamestown Farm Drive
 Collected by: Christina Engemann Send Results To: dave.kimroth@charter.net / christina.engemann@tetratech.com

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers		Sample Analysis Requested (5) (Fill in the number of containers for each test)		Preservative Type (6)	Comments Note: extra sample is required for sample specific QC
						4PC	1113B				
SFRA-26	04-28-14	1422	-	-	Soil	1	X				Each sample is 20g wet soil • Use 5g for dry wt. and rest for extraction
SFRA-27	04-28-14	1439	-	-	Soil	1	X				
<i>OK 4/28/14</i>											

TAT Requested: Normal / Rush: Specify: 72 hrs (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Possible Dioxins/Furans compounds

Sample Collection Time Zone: Eastern Pacific Central Other _____
 Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>Christina Engemann</u>	<u>4/28/14</u>	<u>1700</u>	<u>Cynde Larkins</u>	<u>29 APR 14</u>	<u>1032</u>

CFA PM: Cynde Larkins
 Method of Shipment: FedEx Date Shipped: 4-28-14
 Airbill #: 8042 3157 0929

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Faecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO
 Cooler Temp:
3.1 C

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 6066
Received By: Cyrde Harkins	Date/Time Received: 29 APR 14 1032

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples < 2x background?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within 0-6°C?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: ice bags blue ice dry ice none other (describe) 3.1°C
4 Samples requiring chemical preservation at proper pH?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5 Samples requiring preservation have no residual chlorine?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected: If preservative added, Lot#:
6 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, tests affected:
7 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
8 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
9 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
10 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

Checklist performed by: Initials: **CH** Date: **29 APR 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6066**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25813
Clean Up Batch Number: 25812
Extraction Batch Number: 25811

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
6066001	SFRA-26
6066002	SFRA-27
12010323	Method Blank (MB)
12010324	Laboratory Control Sample (LCS)
12010325	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6066 CFA Work Order: 6066


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 01 MAY 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6066	Client: TETR001	Project: TETR00114
Lab Sample ID: 6066001	Date Collected: 04/28/2014 14:22	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/29/2014 10:32	%Moisture: 17
Client ID: SFRA-26		Prep Basis: Dry Weight
Batch ID: 25813	Method: EPA Method 1613B	
Run Date: 05/01/2014 01:40	Analyst: JTF	Instrument: HRP750
Data File: A30APR14B-12		Dilution: 1
Prep Batch: 25811	Prep Method: SW846 3540C	
Prep Date: 29-APR-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		530	pg/g	1.71	11.2
40321-76-4	1,2,3,7,8-PeCDD	U	3.5	pg/g	3.50	55.8
39227-28-6	1,2,3,4,7,8-HxCDD	J	24.5	pg/g	5.98	55.8
57653-85-7	1,2,3,6,7,8-HxCDD		123	pg/g	6.27	55.8
19408-74-3	1,2,3,7,8,9-HxCDD	J	48.0	pg/g	6.51	55.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		2930	pg/g	12.8	55.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		20100	pg/g	38.2	112
51207-31-9	2,3,7,8-TCDF	J	6.45	pg/g	4.17	11.2
57117-41-6	1,2,3,7,8-PeCDF	J	6.20	pg/g	3.35	55.8
57117-31-4	2,3,4,7,8-PeCDF	J	6.74	pg/g	3.32	55.8
70648-26-9	1,2,3,4,7,8-HxCDF	J	23.2	pg/g	3.46	55.8
57117-44-9	1,2,3,6,7,8-HxCDF	J	9.71	pg/g	3.39	55.8
60851-34-5	2,3,4,6,7,8-HxCDF	J	14.5	pg/g	3.39	55.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	9.21	pg/g	9.21	55.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		284	pg/g	3.57	55.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	26.8	pg/g	6.05	55.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		549	pg/g	7.32	112

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1730	2230	pg/g	77.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1820	2230	pg/g	81.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1730	2230	pg/g	77.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1710	2230	pg/g	76.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1860	2230	pg/g	83.5	(23%-140%)
13C-OCDD		3950	4460	pg/g	88.4	(17%-157%)
13C-2,3,7,8-TCDF		1710	2230	pg/g	76.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1730	2230	pg/g	77.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1780	2230	pg/g	79.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1610	2230	pg/g	72.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1590	2230	pg/g	71.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1610	2230	pg/g	72.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1440	2230	pg/g	64.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1720	2230	pg/g	76.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1600	2230	pg/g	71.8	(26%-138%)
37Cl-2,3,7,8-TCDD		205	223	pg/g	91.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6066	Client: TETR001	Project: TETR00114
Lab Sample ID: 6066002	Date Collected: 04/28/2014 14:39	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 04/29/2014 10:32	%Moisture: 15.3
Client ID: SFRA-27		Prep Basis: Dry Weight
Batch ID: 25813	Method: EPA Method 1613B	
Run Date: 05/01/2014 02:27	Analyst: JTF	Instrument: HRP750
Data File: A30APR14B-13		Dilution: 1
Prep Batch: 25811	Prep Method: SW846 3540C	
Prep Date: 29-APR-14	Prep Aliquot: 1.12 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		161	pg/g	1.76	10.5
40321-76-4	1,2,3,7,8-PeCDD	U	2.93	pg/g	2.93	52.7
39227-28-6	1,2,3,4,7,8-HxCDD	J	6.62	pg/g	3.54	52.7
57653-85-7	1,2,3,6,7,8-HxCDD	J	35.2	pg/g	3.84	52.7
19408-74-3	1,2,3,7,8,9-HxCDD	J	14.9	pg/g	3.92	52.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		920	pg/g	9.29	52.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11200	pg/g	19.1	105
51207-31-9	2,3,7,8-TCDF	U	2.38	pg/g	2.38	10.5
57117-41-6	1,2,3,7,8-PeCDF	U	2.05	pg/g	2.05	52.7
57117-31-4	2,3,4,7,8-PeCDF	U	3.03	pg/g	3.03	52.7
70648-26-9	1,2,3,4,7,8-HxCDF	J	9.19	pg/g	2.82	52.7
57117-44-9	1,2,3,6,7,8-HxCDF	J	5.63	pg/g	2.93	52.7
60851-34-5	2,3,4,6,7,8-HxCDF	J	7.71	pg/g	3.06	52.7
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.51	pg/g	4.51	52.7
67562-39-4	1,2,3,4,6,7,8-HpCDF		163	pg/g	1.62	52.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	15.2	pg/g	2.74	52.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF		611	pg/g	8.20	105

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1710	2110	pg/g	81.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1890	2110	pg/g	89.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1820	2110	pg/g	86.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1760	2110	pg/g	83.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1870	2110	pg/g	88.8	(23%-140%)
13C-OCDD		3860	4210	pg/g	91.6	(17%-157%)
13C-2,3,7,8-TCDF		1710	2110	pg/g	81.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1800	2110	pg/g	85.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1820	2110	pg/g	86.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1730	2110	pg/g	82.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1620	2110	pg/g	77.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1700	2110	pg/g	80.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1510	2110	pg/g	71.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1770	2110	pg/g	84.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1630	2110	pg/g	77.3	(26%-138%)
37Cl-2,3,7,8-TCDD		180	211	pg/g	85.6	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6066

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010324	LCS for batch 25811	13C-2,3,7,8-TCDD		75.0	(20%-175%)
		13C-1,2,3,7,8-PeCDD		82.7	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		79.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		77.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		85.0	(22%-166%)
		13C-OCDD		83.1	(13%-199%)
		13C-2,3,7,8-TCDF		75.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		77.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		79.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		75.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		73.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		73.2	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		65.0	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		73.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		87.7	(31%-191%)
12010325	LCSD for batch 25811	13C-2,3,7,8-TCDD		79.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		88.8	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		82.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		81.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		88.7	(22%-166%)
		13C-OCDD		85.4	(13%-199%)
		13C-2,3,7,8-TCDF		79.6	(22%-152%)
		13C-1,2,3,7,8-PeCDF		82.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		84.6	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.0	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		75.2	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		77.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		67.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		80.7	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		75.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		85.5	(31%-191%)
12010323	MB for batch 25811	13C-2,3,7,8-TCDD		81.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		88.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.4	(23%-140%)
		13C-OCDD		83.5	(17%-157%)
		13C-2,3,7,8-TCDF		82.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		81.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.3	(26%-138%)
		37Cl-2,3,7,8-TCDD		82.3	(35%-197%)
6066001	SFRA-26	13C-2,3,7,8-TCDD		77.4	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6066

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6066001	SFRA-26	13C-1,2,3,7,8-PeCDD		81.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.5	(23%-140%)
		13C-OCDD		88.4	(17%-157%)
		13C-2,3,7,8-TCDF		76.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		77.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		79.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		71.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		72.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		64.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		91.7	(35%-197%)
6066002	SFRA-27	13C-2,3,7,8-TCDD		81.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.8	(23%-140%)
		13C-OCDD		91.6	(17%-157%)
		13C-2,3,7,8-TCDF		81.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		71.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		77.3	(26%-138%)
37Cl-2,3,7,8-TCDD		85.6	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6066

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25811

Matrix: SOLID

Lab Sample ID: 12010324

Instrument: HRP750

Analysis Date: 04/30/2014 23:16

Dilution: 1

Analyst: JTF

Prep Batch ID: 25811

Batch ID: 25813

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	19.5	97.6	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	95.9	95.9	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	98.7	98.7	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	98.7	98.7	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	101	101	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	201	100	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.9	94.4	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	96.9	96.9	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	95.9	95.9	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	99.3	99.3	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	96.2	96.2	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	100	100	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	104	104	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	98.6	98.6	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	101	101	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	174	86.8	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6066

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25811

Matrix: SOLID

Lab Sample ID: 12010325

Instrument: HRP750

Analysis Date: 05/01/2014 00:04

Dilution: 1

Analyst: JTF

Prep Batch ID: 25811

Batch ID: 25813

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	19.9	99.4	67-158	1.86	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	96.5	96.5	70-142	0.561	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	96.1	96.1	70-164	2.69	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	100	100	76-134	1.35	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	99.6	99.6	64-162	1.54	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140	0.175	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	196	97.9	78-144	2.43	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.7	93.7	75-158	0.713	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	97.0	97	80-134	0.177	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	95.3	95.3	68-160	0.611	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	101	101	72-134	1.75	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	101	101	84-130	4.43	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	99.1	99.1	70-156	1.20	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	105	105	78-130	1.01	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	99.9	99.9	82-122	1.26	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	99.6	99.6	78-138	1.03	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	176	87.9	63-170	1.21	0-20

Method Blank Summary

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SDG Number: 6066 Client: TETR001 Matrix: SOLID
Client ID: MB for batch 25811 Instrument ID: HRP750 Data File: A30APR14B-11
Lab Sample ID: 12010323 Prep Date: 29-APR-14 Analyzed: 05/01/14 00:52
Column:

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25811	12010324	A30APR14B-9	04/30/14	2316
02 LCSD for batch 25811	12010325	A30APR14B-10	05/01/14	0004
03 SFRA-26	6066001	A30APR14B-12	05/01/14	0140
04 SFRA-27	6066002	A30APR14B-13	05/01/14	0227

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6066	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010323		Matrix: SOLID
Client Sample: QC for batch 25811		
Client ID: MB for batch 25811		Prep Basis: As Received
Batch ID: 25813	Method: EPA Method 1613B	
Run Date: 05/01/2014 00:52	Analyst: JTF	Instrument: HRP750
Data File: A30APR14B-11		Dilution: 1
Prep Batch: 25811	Prep Method: SW846 3540C	
Prep Date: 29-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.124	pg/g	0.124	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.274	pg/g	0.274	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.179	pg/g	0.179	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.188	pg/g	0.188	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.314	pg/g	0.314	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.366	pg/g	0.238	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	1.26	pg/g	0.512	10.0
51207-31-9	2,3,7,8-TCDF	U	.138	pg/g	0.138	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.254	pg/g	0.0684	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.184	pg/g	0.184	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.174	pg/g	0.136	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.266	pg/g	0.135	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.216	pg/g	0.216	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.360	pg/g	0.216	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.234	pg/g	0.164	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.3	pg/g	0.300	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.472	pg/g	0.472	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		163	200	pg/g	81.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		178	200	pg/g	88.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		170	200	pg/g	84.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	80.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		177	200	pg/g	88.4	(23%-140%)
13C-OCDD		334	400	pg/g	83.5	(17%-157%)
13C-2,3,7,8-TCDF		165	200	pg/g	82.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		170	200	pg/g	85.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		174	200	pg/g	87.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		154	200	pg/g	77.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		154	200	pg/g	76.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		156	200	pg/g	78.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		133	200	pg/g	66.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		164	200	pg/g	81.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		149	200	pg/g	74.3	(26%-138%)
37Cl-2,3,7,8-TCDD		16.5	20.0	pg/g	82.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6066	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010324		Matrix: SOLID
Client Sample: QC for batch 25811		
Client ID: LCS for batch 25811		Prep Basis: As Received
Batch ID: 25813	Method: EPA Method 1613B	
Run Date: 04/30/2014 23:16	Analyst: JTF	Instrument: HRP750
Data File: A30APR14B-9		Dilution: 1
Prep Batch: 25811	Prep Method: SW846 3540C	
Prep Date: 29-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.5	pg/g	0.166	1.00
40321-76-4	1,2,3,7,8-PeCDD		95.9	pg/g	0.314	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.7	pg/g	0.434	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.7	pg/g	0.426	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		101	pg/g	0.458	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	0.638	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		201	pg/g	1.01	10.0
51207-31-9	2,3,7,8-TCDF		18.9	pg/g	0.193	1.00
57117-41-6	1,2,3,7,8-PeCDF		96.9	pg/g	0.286	5.00
57117-31-4	2,3,4,7,8-PeCDF		95.9	pg/g	0.276	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		99.3	pg/g	0.534	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		96.2	pg/g	0.538	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		100	pg/g	0.534	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		104	pg/g	0.844	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		98.6	pg/g	0.244	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		101	pg/g	0.394	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		174	pg/g	0.818	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		150	200	pg/g	75.0	(20%-175%)
13C-1,2,3,7,8-PeCDD		165	200	pg/g	82.7	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		159	200	pg/g	79.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		154	200	pg/g	77.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		170	200	pg/g	85.0	(22%-166%)
13C-OCDD		332	400	pg/g	83.1	(13%-199%)
13C-2,3,7,8-TCDF		150	200	pg/g	75.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		154	200	pg/g	77.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		159	200	pg/g	79.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		151	200	pg/g	75.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		146	200	pg/g	73.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		146	200	pg/g	73.2	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		130	200	pg/g	65.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		157	200	pg/g	78.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		147	200	pg/g	73.4	(20%-186%)
37Cl-2,3,7,8-TCDD		17.5	20.0	pg/g	87.7	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6066	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010325		Matrix: SOLID
Client Sample: QC for batch 25811		
Client ID: LCSD for batch 25811		Prep Basis: As Received
Batch ID: 25813	Method: EPA Method 1613B	
Run Date: 05/01/2014 00:04	Analyst: JTF	Instrument: HRP750
Data File: A30APR14B-10		Dilution: 1
Prep Batch: 25811	Prep Method: SW846 3540C	
Prep Date: 29-APR-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.9	pg/g	0.185	1.00
40321-76-4	1,2,3,7,8-PeCDD		96.5	pg/g	0.252	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.1	pg/g	0.500	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		100	pg/g	0.550	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		99.6	pg/g	0.558	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	0.554	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		196	pg/g	1.27	10.0
51207-31-9	2,3,7,8-TCDF		18.7	pg/g	0.167	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.0	pg/g	0.340	5.00
57117-31-4	2,3,4,7,8-PeCDF		95.3	pg/g	0.330	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		101	pg/g	0.482	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.488	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		99.1	pg/g	0.518	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		105	pg/g	0.750	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		99.9	pg/g	0.480	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.6	pg/g	0.810	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		176	pg/g	0.694	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		159	200	pg/g	79.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		178	200	pg/g	88.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		166	200	pg/g	82.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		162	200	pg/g	81.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		177	200	pg/g	88.7	(22%-166%)
13C-OCDD		342	400	pg/g	85.4	(13%-199%)
13C-2,3,7,8-TCDF		159	200	pg/g	79.6	(22%-152%)
13C-1,2,3,7,8-PeCDF		165	200	pg/g	82.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		169	200	pg/g	84.6	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		154	200	pg/g	77.0	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		150	200	pg/g	75.2	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		155	200	pg/g	77.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		135	200	pg/g	67.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		161	200	pg/g	80.7	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		150	200	pg/g	75.1	(20%-186%)
37Cl-2,3,7,8-TCDD		17.1	20.0	pg/g	85.5	(31%-191%)

Comments:

May 05, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6074

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 01, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: _____ of _____
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number: **10074**
 Phone #: **714-517-6798**

Client Name: **Tetra Tech Inc**

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: **Strocker Forest Removal** Fax #:
 Address: **20 Jamestown Forest Drive**
 Collected by: **R. Clayton** Send Results To: **dave.kerr@tetra.com**

Total number of containers	42																			Preservative Type (6)
	1613B																			Comments Note: extra sample is required for sample specific QC

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers														
SFRA-28	04-29-14	1638	-	-	Soil	1	X													
SFRA-29	04-30-14	1105	-	-	Soil	1	X													
SFRA-30	04-30-14	1112	-	-	Soil	1	X													
PC 4-30-14																				

TAT Requested: Normal: Rush: Specify: **72 hrs** (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Possible Dioxins/Furans

Sample Collection Time Zone
 Eastern Pacific
 Central Other
 Mountain

Chain of Custody Signatures					Sample Shipping and Delivery Details				
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time	CFA PM:	Method of Shipment:	Date Shipped:	Airbill #:
<i>R. Clayton</i>	4-30-14	1310	<i>Cynde Larkins</i>	01MAY14	0933	<i>Cynde Larkins</i>	FedEx	4-30-14	80423157-0918

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
3.9°C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6074
Received By: Cynde Larkins	Date/Time Received: 01 MAY 14 0933

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other(describe) 3.9°C
4 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
6 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
7 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
8 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CL** Date: **01 MAY 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6074**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25847
Clean Up Batch Number: 25846
Extraction Batch Number: 25845

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6074001	SFRA-28
6074002	SFRA-29
6074003	SFRA-30
12010349	Method Blank (MB)
12010350	Laboratory Control Sample (LCS)
12010351	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

Sample 6074003 (SFRA-30)- Batch 25847 was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6074 CFA Work Order: 6074


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 05 MAY 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6074	Client: TETR001	Project: TETR00114
Lab Sample ID: 6074001	Date Collected: 04/29/2014 16:38	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/01/2014 09:33	%Moisture: 17.9
Client ID: SFRA-28		Prep Basis: Dry Weight
Batch ID: 25847	Method: EPA Method 1613B	
Run Date: 05/02/2014 23:41	Analyst: JTF	Instrument: HRP750
Data File: A02MAY14B_2-4		Dilution: 1
Prep Batch: 25845	Prep Method: SW846 3540C	
Prep Date: 01-MAY-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1220	pg/g	1.98	12.1
40321-76-4	1,2,3,7,8-PeCDD	U	2.51	pg/g	2.51	60.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.66	pg/g	3.66	60.3
57653-85-7	1,2,3,6,7,8-HxCDD	U	7.96	pg/g	7.96	60.3
19408-74-3	1,2,3,7,8,9-HxCDD	J	4.48	pg/g	3.93	60.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		147	pg/g	6.32	60.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		3870	pg/g	18.0	121
51207-31-9	2,3,7,8-TCDF	J	11.2	pg/g	3.50	12.1
57117-41-6	1,2,3,7,8-PeCDF	J	21.0	pg/g	2.80	60.3
57117-31-4	2,3,4,7,8-PeCDF	U	2.72	pg/g	2.72	60.3
70648-26-9	1,2,3,4,7,8-HxCDF	U	7.98	pg/g	7.98	60.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.6	pg/g	2.60	60.3
60851-34-5	2,3,4,6,7,8-HxCDF	J	4.07	pg/g	2.84	60.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.34	pg/g	4.34	60.3
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	28.4	pg/g	0.504	60.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.30	pg/g	0.916	60.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	69.2	pg/g	6.53	121

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1660	2410	pg/g	68.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1730	2410	pg/g	71.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1730	2410	pg/g	71.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1810	2410	pg/g	75.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1790	2410	pg/g	74.0	(23%-140%)
13C-OCDD		3110	4820	pg/g	64.5	(17%-157%)
13C-2,3,7,8-TCDF		1720	2410	pg/g	71.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1730	2410	pg/g	71.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1680	2410	pg/g	69.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1720	2410	pg/g	71.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1720	2410	pg/g	71.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1700	2410	pg/g	70.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1460	2410	pg/g	60.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1770	2410	pg/g	73.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1490	2410	pg/g	61.8	(26%-138%)
37Cl-2,3,7,8-TCDD		199	241	pg/g	82.4	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6074	Client: TETR001	Project: TETR00114
Lab Sample ID: 6074002	Date Collected: 04/30/2014 11:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/01/2014 09:33	%Moisture: 20.5
Client ID: SFRA-29		Prep Basis: Dry Weight
Batch ID: 25847	Method: EPA Method 1613B	
Run Date: 05/03/2014 00:29	Analyst: JTF	Instrument: HRP750
Data File: A02MAY14B_2-5		Dilution: 1
Prep Batch: 25845	Prep Method: SW846 3540C	
Prep Date: 01-MAY-14	Prep Aliquot: 1.33 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	7.92	pg/g	1.17	9.46
40321-76-4	1,2,3,7,8-PeCDD	U	1.47	pg/g	1.47	47.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.38	pg/g	2.38	47.3
57653-85-7	1,2,3,6,7,8-HxCDD	J	2.70	pg/g	2.57	47.3
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.63	pg/g	2.63	47.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		149	pg/g	7.45	47.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8210	pg/g	21.4	94.6
51207-31-9	2,3,7,8-TCDF	U	1.21	pg/g	1.21	9.46
57117-41-6	1,2,3,7,8-PeCDF	U	1.08	pg/g	1.08	47.3
57117-31-4	2,3,4,7,8-PeCDF	U	.842	pg/g	0.842	47.3
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.16	pg/g	1.16	47.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.11	pg/g	1.11	47.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.22	pg/g	1.22	47.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.95	pg/g	1.95	47.3
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	5.96	pg/g	0.318	47.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.579	pg/g	0.579	47.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	22.4	pg/g	4.61	94.6

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1400	1890	pg/g	74.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		1400	1890	pg/g	74.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1450	1890	pg/g	76.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1470	1890	pg/g	77.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1530	1890	pg/g	80.7	(23%-140%)
13C-OCDD		2900	3780	pg/g	76.7	(17%-157%)
13C-2,3,7,8-TCDF		1450	1890	pg/g	76.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1400	1890	pg/g	73.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1340	1890	pg/g	70.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1440	1890	pg/g	76.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1460	1890	pg/g	77.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1430	1890	pg/g	75.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1240	1890	pg/g	65.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1530	1890	pg/g	81.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1330	1890	pg/g	70.4	(26%-138%)
37Cl-2,3,7,8-TCDD		172	189	pg/g	91.2	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6074	Client: TETR001	Project: TETR00114
Lab Sample ID: 6074003	Date Collected: 04/30/2014 11:12	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/01/2014 09:33	%Moisture: 31.8
Client ID: SFRA-30		Prep Basis: Dry Weight
Batch ID: 25847	Method: EPA Method 1613B	
Run Date: 05/05/2014 15:10	Analyst: JTF	Instrument: HRP750
Data File: A05MAY14C-3		Dilution: 10
Prep Batch: 25845	Prep Method: SW846 3540C	
Prep Date: 01-MAY-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		11000	pg/g	25.5	136
40321-76-4	1,2,3,7,8-PeCDD	U	42.3	pg/g	42.3	678
39227-28-6	1,2,3,4,7,8-HxCDD	U	61.3	pg/g	61.3	678
57653-85-7	1,2,3,6,7,8-HxCDD	J	268	pg/g	105	678
19408-74-3	1,2,3,7,8,9-HxCDD	J	90.2	pg/g	86.6	678
35822-46-9	1,2,3,4,6,7,8-HpCDD		2040	pg/g	96.3	678
3268-87-9	1,2,3,4,6,7,8,9-OCDD		16500	pg/g	339	1360
51207-31-9	2,3,7,8-TCDF	J	74.5	pg/g	36.4	136
57117-41-6	1,2,3,7,8-PeCDF	J	31.9	pg/g	29.0	678
57117-31-4	2,3,4,7,8-PeCDF	U	26.6	pg/g	26.6	678
70648-26-9	1,2,3,4,7,8-HxCDF	U	54.6	pg/g	54.6	678
57117-44-9	1,2,3,6,7,8-HxCDF	U	47.1	pg/g	47.1	678
60851-34-5	2,3,4,6,7,8-HxCDF	J	45.9	pg/g	34.2	678
72918-21-9	1,2,3,7,8,9-HxCDF	U	88.5	pg/g	88.5	678
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	537	pg/g	22.5	678
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	68.9	pg/g	26.0	678
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	1150	pg/g	84.1	1360

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1700	2710	pg/g	62.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1520	2710	pg/g	56.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2280	2710	pg/g	83.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1830	2710	pg/g	67.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2030	2710	pg/g	75.0	(23%-140%)
13C-OCDD		5210	5430	pg/g	96.0	(17%-157%)
13C-2,3,7,8-TCDF		1760	2710	pg/g	65.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1530	2710	pg/g	56.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1600	2710	pg/g	59.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2270	2710	pg/g	83.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2450	2710	pg/g	90.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2530	2710	pg/g	93.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1570	2710	pg/g	58.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1920	2710	pg/g	70.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2590	2710	pg/g	95.4	(26%-138%)
37Cl-2,3,7,8-TCDD		228	271	pg/g	84.0	(35%-197%)

Comments:

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6074

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010350	LCS for batch 25845	13C-2,3,7,8-TCDD		70.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		75.6	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		74.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		74.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		76.1	(22%-166%)
		13C-OCDD		67.9	(13%-199%)
		13C-2,3,7,8-TCDF		70.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		75.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		74.1	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		73.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		73.2	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		73.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		60.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		75.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		65.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		88.3	(31%-191%)
12010351	LCSD for batch 25845	13C-2,3,7,8-TCDD		73.1	(20%-175%)
		13C-1,2,3,7,8-PeCDD		77.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		75.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		77.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		80.3	(22%-166%)
		13C-OCDD		73.5	(13%-199%)
		13C-2,3,7,8-TCDF		71.4	(22%-152%)
		13C-1,2,3,7,8-PeCDF		75.4	(21%-192%)
		13C-2,3,4,7,8-PeCDF		71.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		78.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		76.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		75.6	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		63.5	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		75.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		69.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		89.3	(31%-191%)
12010349	MB for batch 25845	13C-2,3,7,8-TCDD		74.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.7	(23%-140%)
		13C-OCDD		72.9	(17%-157%)
		13C-2,3,7,8-TCDF		73.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		78.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		76.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		67.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		93.0	(35%-197%)
6074001	SFRA-28	13C-2,3,7,8-TCDD		68.8	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6074

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6074001	SFRA-28	13C-1,2,3,7,8-PeCDD		71.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		71.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		74.0	(23%-140%)
		13C-OCDD		64.5	(17%-157%)
		13C-2,3,7,8-TCDF		71.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		71.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		69.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		71.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		71.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		70.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		60.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		73.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		61.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		82.4	(35%-197%)
6074002	SFRA-29	13C-2,3,7,8-TCDD		74.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		74.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		76.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.7	(23%-140%)
		13C-OCDD		76.7	(17%-157%)
		13C-2,3,7,8-TCDF		76.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		73.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		70.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		75.7	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		65.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		81.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		70.4	(26%-138%)
37Cl-2,3,7,8-TCDD		91.2	(35%-197%)		
6074003	SFRA-30	13C-2,3,7,8-TCDD		62.6	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		56.2	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.9	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		67.3	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		75.0	D (23%-140%)
		13C-OCDD		96.0	D (17%-157%)
		13C-2,3,7,8-TCDF		65.0	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		56.2	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		59.1	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		83.8	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.2	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		93.1	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		58.0	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		70.7	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		95.4	D (26%-138%)
37Cl-2,3,7,8-TCDD		84.0	D (35%-197%)		

* Recovery outside Acceptance Limits

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6074

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits
Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6074

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25845

Matrix: SOLID

Lab Sample ID: 12010350

Instrument: HRP750

Analysis Date: 05/02/2014 21:19

Dilution: 1

Analyst: JTF

Prep Batch ID: 25845

Batch ID: 25847

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	19.9	99.6	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	96.2	96.2	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	93.8	93.8	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	98.1	98.1	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	99.8	99.8	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	91.2	91.2	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	190	95.2	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.7	93.5	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	96.2	96.2	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	96.6	96.6	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	95.8	95.8	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	99.4	99.4	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	97.9	97.9	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	100	100	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	93.0	93	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	98.0	98	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	177	88.6	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6074

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25845

Matrix: SOLID

Lab Sample ID: 12010351

Instrument: HRP750

Analysis Date: 05/02/2014 22:05

Dilution: 1

Analyst: JTF

Prep Batch ID: 25845

Batch ID: 25847

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	19.2	95.9	67-158	3.72	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	92.8	92.8	70-142	3.60	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	93.4	93.4	70-164	0.406	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	94.9	94.9	76-134	3.25	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	95.6	95.6	64-162	4.36	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	92.5	92.5	70-140	1.37	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	190	95.2	78-144	0.0252	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.5	92.4	75-158	1.18	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	93.4	93.4	80-134	3.04	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	96.4	96.4	68-160	0.236	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	96.1	96.1	72-134	0.258	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	99.8	99.8	84-130	0.444	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	95.4	95.4	70-156	2.58	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	102	102	78-130	1.48	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	94.7	94.7	82-122	1.81	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	96.8	96.8	78-138	1.16	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	175	87.4	63-170	1.36	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6074
Client ID: MB for batch 25845
Lab Sample ID: 12010349
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 01-MAY-14

Matrix: SOLID
Data File: A02MAY14B_2-3
Analyzed: 05/02/14 22:53

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25845	12010350	A02MAY14B_2-1	05/02/14	2119
02 LCSD for batch 25845	12010351	A02MAY14B_2-2	05/02/14	2205
03 SFRA-28	6074001	A02MAY14B_2-4	05/02/14	2341
04 SFRA-29	6074002	A02MAY14B_2-5	05/03/14	0029
05 SFRA-30	6074003	A05MAY14C-3	05/05/14	1510

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6074	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010349		Matrix: SOLID
Client Sample: QC for batch 25845		
Client ID: MB for batch 25845		Prep Basis: As Received
Batch ID: 25847	Method: EPA Method 1613B	
Run Date: 05/02/2014 22:53	Analyst: JTF	Instrument: HRP750
Data File: A02MAY14B_2-3		Dilution: 1
Prep Batch: 25845	Prep Method: SW846 3540C	
Prep Date: 01-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.11	pg/g	0.110	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.33	pg/g	0.330	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.173	pg/g	0.173	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.179	pg/g	0.179	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.352	pg/g	0.352	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.258	pg/g	0.230	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.724	pg/g	0.570	10.0
51207-31-9	2,3,7,8-TCDF	U	.133	pg/g	0.133	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.22	pg/g	0.220	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.242	pg/g	0.0814	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.224	pg/g	0.224	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.21	pg/g	0.210	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.224	pg/g	0.189	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.41	pg/g	0.410	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.168	pg/g	0.0746	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.288	pg/g	0.137	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.476	pg/g	0.476	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		148	200	pg/g	74.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		157	200	pg/g	78.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	77.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		162	200	pg/g	80.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		167	200	pg/g	83.7	(23%-140%)
13C-OCDD		292	400	pg/g	72.9	(17%-157%)
13C-2,3,7,8-TCDF		147	200	pg/g	73.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		156	200	pg/g	78.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		152	200	pg/g	76.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		157	200	pg/g	78.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		157	200	pg/g	78.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		136	200	pg/g	67.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		161	200	pg/g	80.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		142	200	pg/g	71.0	(26%-138%)
37Cl-2,3,7,8-TCDD		18.6	20.0	pg/g	93.0	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6074	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010350		Matrix: SOLID
Client Sample: QC for batch 25845		
Client ID: LCS for batch 25845		Prep Basis: As Received
Batch ID: 25847	Method: EPA Method 1613B	
Run Date: 05/02/2014 21:19	Analyst: JTF	Instrument: HRP750
Data File: A02MAY14B_2-1		Dilution: 1
Prep Batch: 25845	Prep Method: SW846 3540C	
Prep Date: 01-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.9	pg/g	0.161	1.00
40321-76-4	1,2,3,7,8-PeCDD		96.2	pg/g	0.342	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		93.8	pg/g	0.458	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.1	pg/g	0.464	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		99.8	pg/g	0.490	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		91.2	pg/g	0.662	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		190	pg/g	1.23	10.0
51207-31-9	2,3,7,8-TCDF		18.7	pg/g	0.177	1.00
57117-41-6	1,2,3,7,8-PeCDF		96.2	pg/g	0.298	5.00
57117-31-4	2,3,4,7,8-PeCDF		96.6	pg/g	0.304	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		95.8	pg/g	0.382	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		99.4	pg/g	0.380	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		97.9	pg/g	0.400	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		100	pg/g	0.652	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		93.0	pg/g	0.262	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		98.0	pg/g	0.464	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		177	pg/g	1.17	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		141	200	pg/g	70.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		151	200	pg/g	75.6	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		148	200	pg/g	74.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		148	200	pg/g	74.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		152	200	pg/g	76.1	(22%-166%)
13C-OCDD		271	400	pg/g	67.9	(13%-199%)
13C-2,3,7,8-TCDF		140	200	pg/g	70.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		152	200	pg/g	75.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		148	200	pg/g	74.1	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		147	200	pg/g	73.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		146	200	pg/g	73.2	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		147	200	pg/g	73.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		122	200	pg/g	60.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		152	200	pg/g	75.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		132	200	pg/g	65.9	(20%-186%)
37Cl-2,3,7,8-TCDD		17.7	20.0	pg/g	88.3	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6074	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010351		Matrix: SOLID
Client Sample: QC for batch 25845		
Client ID: LCSD for batch 25845		Prep Basis: As Received
Batch ID: 25847	Method: EPA Method 1613B	
Run Date: 05/02/2014 22:05	Analyst: JTF	Instrument: HRP750
Data File: A02MAY14B_2-2		Dilution: 1
Prep Batch: 25845	Prep Method: SW846 3540C	
Prep Date: 01-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.2	pg/g	0.132	1.00
40321-76-4	1,2,3,7,8-PeCDD		92.8	pg/g	0.316	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		93.4	pg/g	0.550	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		94.9	pg/g	0.602	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		95.6	pg/g	0.612	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		92.5	pg/g	0.646	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		190	pg/g	1.44	10.0
51207-31-9	2,3,7,8-TCDF		18.5	pg/g	0.177	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.4	pg/g	0.272	5.00
57117-31-4	2,3,4,7,8-PeCDF		96.4	pg/g	0.274	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		96.1	pg/g	0.494	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		99.8	pg/g	0.480	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		95.4	pg/g	0.524	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		102	pg/g	0.788	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		94.7	pg/g	0.252	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.8	pg/g	0.424	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		175	pg/g	1.16	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		146	200	pg/g	73.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		155	200	pg/g	77.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		151	200	pg/g	75.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	77.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		161	200	pg/g	80.3	(22%-166%)
13C-OCDD		294	400	pg/g	73.5	(13%-199%)
13C-2,3,7,8-TCDF		143	200	pg/g	71.4	(22%-152%)
13C-1,2,3,7,8-PeCDF		151	200	pg/g	75.4	(21%-192%)
13C-2,3,4,7,8-PeCDF		142	200	pg/g	71.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		157	200	pg/g	78.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		154	200	pg/g	76.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		151	200	pg/g	75.6	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		127	200	pg/g	63.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		152	200	pg/g	75.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		139	200	pg/g	69.5	(20%-186%)
37Cl-2,3,7,8-TCDD		17.9	20.0	pg/g	89.3	(31%-191%)

Comments:

May 08, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6086

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 05, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request
 CFA Work Order Number: 6086

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc. Phone #: 314-517-6788

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strocker Forest Removal Action Fax #:
 Address: 20 Jamestown Farm Drive
 Collected by: R. Clayton Send Results To: dave.kinroth@charter.net

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers	Sample Analysis Requested ⁽⁵⁾													Preservative Type ⁽⁶⁾	Comments					
							1	2	3	4	5	6	7	8	9	10	11	12	13							
<u>SFRA-31</u>	<u>05/2/14</u>	<u>1053</u>			<u>Soil</u>	<u>1</u>	<u>X</u>																			Comments Note: extra sample is required for sample specific QC
<u>SFRA-32</u>	<u>05/02/14</u>	<u>1100</u>			<u>Soil</u>	<u>1</u>	<u>X</u>																			
<u>SFRA-33</u>	<u>05/02/14</u>	<u>1000</u>			<u>Soil</u>	<u>1</u>	<u>X</u>																			

TAT Requested: Normal: Rush: X Specify: 72hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone:
 Eastern Pacific
Central Other _____
 Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>R. Clayton</u>	<u>5-2-14</u>	<u>1315</u>	<u>Cynde Larkins</u>	<u>05MAY14</u>	<u>0910</u>

CFA PM: Cynde Larkins
 Method of Shipment: FedEx Date Shipped: 5-2-14
 Airbill #: 8042 3157 0734
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or- N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
19.1 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6086
Received By: Cynde Larkins	Date/Time Received: 05MAY14 0900

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?			✓	Preservation Method: ice bags blue ice dry ice <u>none</u> other (describe) 19.1°C
4	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5	Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
6	Samples received within holding time?	✓			Sample IDs, tests affected:
7	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
8	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
9	Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
10	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: CL Date: 05MAY14

Subject: Seewald Samples

From: Valerie Davis <Valerie.Davis@cfanalytical.com>

Date: 5/2/2014 5:16 PM

To: Cynde Larkins <cynde.larkins@cfanalytical.com>, Chris Cornwell <Chris.Cornwell@CFAnalytical.com>, Mike Larkins <Mike.Larkins@cfanalytical.com>, Heather Patterson <heather.patterson@cfanalytical.com>

We will receive three dioxin samples on Monday for 72 hour TAT. The samples will not be shipped on ice. Please document the nonconformance on the SRR and proceed with the analysis. Please contact Dave Kinroth with questions.

Have a great weekend!

--

Valerie Davis
Project Manager
Cape Fear Analytical, LLC
3306 Kitty Hawk Rd.
Suite 120
Wilmington, NC 28405
Phone: 910-795-0421
E-mail: valerie.davis@cfanalytical.com

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6086**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25868
Clean Up Batch Number: 25867
Extraction Batch Number: 25866

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
6086001	SFRA-31
6086002	SFRA-32
6086003	SFRA-33
12010370	Method Blank (MB)
12010371	Laboratory Control Sample (LCS)
12010372	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

Samples 6086001 (SFRA-31) and 6086003 (SFRA-33)- Batch 25868 were diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6086 CFA Work Order: 6086


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 08 MAY 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 6086001	Date Collected: 05/02/2014 10:53	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/05/2014 09:00	%Moisture: 24.9
Client ID: SFRA-31		Prep Basis: Dry Weight
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 12:32	Analyst: JTF	Instrument: HRP750
Data File: A07MAY14A-6		Dilution: 10
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20300	pg/g	19.1	131
40321-76-4	1,2,3,7,8-PeCDD	U	32.4	pg/g	32.4	653
39227-28-6	1,2,3,4,7,8-HxCDD	J	36.5	pg/g	22.0	653
57653-85-7	1,2,3,6,7,8-HxCDD	J	190	pg/g	21.9	653
19408-74-3	1,2,3,7,8,9-HxCDD	J	62.0	pg/g	23.3	653
35822-46-9	1,2,3,4,6,7,8-HpCDD		1560	pg/g	45.5	653
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13900	pg/g	103	1310
51207-31-9	2,3,7,8-TCDF	J	101	pg/g	28.0	131
57117-41-6	1,2,3,7,8-PeCDF	U	11.2	pg/g	11.2	653
57117-31-4	2,3,4,7,8-PeCDF	J	17.5	pg/g	10.6	653
70648-26-9	1,2,3,4,7,8-HxCDF	J	44.3	pg/g	13.1	653
57117-44-9	1,2,3,6,7,8-HxCDF	J	28.3	pg/g	12.0	653
60851-34-5	2,3,4,6,7,8-HxCDF	J	36.5	pg/g	12.3	653
72918-21-9	1,2,3,7,8,9-HxCDF	U	22.5	pg/g	22.5	653
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	645	pg/g	4.00	653
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	31.9	pg/g	31.9	653
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	501	pg/g	34.2	1310

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2130	2610	pg/g	81.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		2320	2610	pg/g	88.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2260	2610	pg/g	86.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2380	2610	pg/g	91.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2330	2610	pg/g	89.3	(23%-140%)
13C-OCDD		4290	5220	pg/g	82.2	(17%-157%)
13C-2,3,7,8-TCDF		2120	2610	pg/g	81.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		2160	2610	pg/g	82.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2230	2610	pg/g	85.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2050	2610	pg/g	78.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2160	2610	pg/g	82.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2130	2610	pg/g	81.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1760	2610	pg/g	67.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2210	2610	pg/g	84.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1930	2610	pg/g	74.0	(26%-138%)
37Cl-2,3,7,8-TCDD		317	261	pg/g	121	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 6086002	Date Collected: 05/02/2014 11:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/05/2014 09:00	%Moisture: 20.6
Client ID: SFRA-32		Prep Basis: Dry Weight
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 11:44	Analyst: JTF	Instrument: HRP750
Data File: A07MAY14A-5		Dilution: 1
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 1.1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3190	pg/g	4.44	11.4
40321-76-4	1,2,3,7,8-PeCDD	U	5.04	pg/g	5.04	57.2
39227-28-6	1,2,3,4,7,8-HxCDD	J	12.5	pg/g	4.60	57.2
57653-85-7	1,2,3,6,7,8-HxCDD	J	29.7	pg/g	4.35	57.2
19408-74-3	1,2,3,7,8,9-HxCDD	J	12.5	pg/g	4.74	57.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		510	pg/g	13.1	57.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10900	pg/g	19.8	114
51207-31-9	2,3,7,8-TCDF		20.8	pg/g	4.81	11.4
57117-41-6	1,2,3,7,8-PeCDF	J	17.8	pg/g	4.14	57.2
57117-31-4	2,3,4,7,8-PeCDF	U	4.03	pg/g	4.03	57.2
70648-26-9	1,2,3,4,7,8-HxCDF	U	11.2	pg/g	11.2	57.2
57117-44-9	1,2,3,6,7,8-HxCDF	J	5.20	pg/g	3.46	57.2
60851-34-5	2,3,4,6,7,8-HxCDF	U	6.98	pg/g	6.98	57.2
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.91	pg/g	5.91	57.2
67562-39-4	1,2,3,4,6,7,8-HpCDF		92.9	pg/g	0.957	57.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	8.49	pg/g	1.68	57.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF		137	pg/g	7.83	114

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1850	2290	pg/g	81.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1880	2290	pg/g	82.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1890	2290	pg/g	82.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1980	2290	pg/g	86.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1980	2290	pg/g	86.3	(23%-140%)
13C-OCDD		3970	4580	pg/g	86.7	(17%-157%)
13C-2,3,7,8-TCDF		1860	2290	pg/g	81.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1780	2290	pg/g	77.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1810	2290	pg/g	79.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1780	2290	pg/g	77.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1800	2290	pg/g	78.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1830	2290	pg/g	79.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1560	2290	pg/g	68.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1880	2290	pg/g	82.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1670	2290	pg/g	73.0	(26%-138%)
37Cl-2,3,7,8-TCDD		222	229	pg/g	97.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 6086002	Date Collected: 05/02/2014 11:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/05/2014 09:00	%Moisture: 20.6
Client ID: SFRA-32		Prep Basis: Dry Weight
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 20:13	Analyst: JTF	Instrument: HRP763
Data File: b07may14f_2-3		Dilution: 1
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 1.1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		22.5	pg/g	2.22	11.4

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 6086003	Date Collected: 05/02/2014 10:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/05/2014 09:00	%Moisture: 22.1
Client ID: SFRA-33		Prep Basis: Dry Weight
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 13:19	Analyst: JTF	Instrument: HRP750
Data File: A07MAY14A-7		Dilution: 10
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 1.14 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		24400	pg/g	51.3	113
40321-76-4	1,2,3,7,8-PeCDD	U	16.4	pg/g	16.4	563
39227-28-6	1,2,3,4,7,8-HxCDD	U	52.7	pg/g	52.7	563
57653-85-7	1,2,3,6,7,8-HxCDD	U	49.3	pg/g	49.3	563
19408-74-3	1,2,3,7,8,9-HxCDD	U	53.8	pg/g	53.8	563
35822-46-9	1,2,3,4,6,7,8-HpCDD		704	pg/g	81.3	563
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10700	pg/g	175	1130
51207-31-9	2,3,7,8-TCDF		147	pg/g	38.5	113
57117-41-6	1,2,3,7,8-PeCDF	U	14.6	pg/g	14.6	563
57117-31-4	2,3,4,7,8-PeCDF	U	14	pg/g	14.0	563
70648-26-9	1,2,3,4,7,8-HxCDF	U	24.5	pg/g	24.5	563
57117-44-9	1,2,3,6,7,8-HxCDF	U	24.5	pg/g	24.5	563
60851-34-5	2,3,4,6,7,8-HxCDF	U	27.9	pg/g	27.9	563
72918-21-9	1,2,3,7,8,9-HxCDF	U	47	pg/g	47.0	563
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	158	pg/g	12.9	563
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	22.5	pg/g	22.5	563
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	220	pg/g	74.5	1130

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1850	2250	pg/g	82.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1850	2250	pg/g	82.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1700	2250	pg/g	75.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1940	2250	pg/g	86.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1800	2250	pg/g	80.0	(23%-140%)
13C-OCDD		3440	4500	pg/g	76.3	(17%-157%)
13C-2,3,7,8-TCDF		1790	2250	pg/g	79.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1780	2250	pg/g	79.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1820	2250	pg/g	80.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1650	2250	pg/g	73.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1710	2250	pg/g	76.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1750	2250	pg/g	77.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1390	2250	pg/g	61.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1810	2250	pg/g	80.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1610	2250	pg/g	71.3	(26%-138%)
37Cl-2,3,7,8-TCDD		286	225	pg/g	127	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 6086003	Date Collected: 05/02/2014 10:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/05/2014 09:00	%Moisture: 22.1
Client ID: SFRA-33		Prep Basis: Dry Weight
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 20:52	Analyst: JTF	Instrument: HRP763
Data File: b07may14f_2-5		Dilution: 10
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 1.14 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		154	pg/g	14.4	113

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6086

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010371	LCS for batch 25866	13C-2,3,7,8-TCDD		74.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		77.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		77.0	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		82.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		80.3	(22%-166%)
		13C-OCDD		74.0	(13%-199%)
		13C-2,3,7,8-TCDF		75.4	(22%-152%)
		13C-1,2,3,7,8-PeCDF		70.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		73.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		73.6	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		75.9	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		61.9	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		77.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		68.7	(20%-186%)
		37Cl-2,3,7,8-TCDD		86.3	(31%-191%)
12010372	LCSD for batch 25866	13C-2,3,7,8-TCDD		71.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		78.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		77.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		78.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		81.3	(22%-166%)
		13C-OCDD		75.8	(13%-199%)
		13C-2,3,7,8-TCDF		72.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		77.4	(21%-192%)
		13C-2,3,4,7,8-PeCDF		75.1	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		72.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		72.9	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		61.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		76.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		66.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		79.6	(31%-191%)
12010370	MB for batch 25866	13C-2,3,7,8-TCDD		82.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.9	(23%-140%)
		13C-OCDD		85.4	(17%-157%)
		13C-2,3,7,8-TCDF		82.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		81.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		81.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		68.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		92.1	(35%-197%)
6086002	SFRA-32	13C-2,3,7,8-TCDD		81.0	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6086

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6086002	SFRA-32	13C-1,2,3,7,8-PeCDD		82.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.3	(23%-140%)
		13C-OCDD		86.7	(17%-157%)
		13C-2,3,7,8-TCDF		81.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		77.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		79.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		68.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		97.2	(35%-197%)
6086001	SFRA-31	13C-2,3,7,8-TCDD		81.7	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		88.8	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.4	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		91.2	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.3	D (23%-140%)
		13C-OCDD		82.2	D (17%-157%)
		13C-2,3,7,8-TCDF		81.2	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		82.7	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		85.2	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.5	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		82.7	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.5	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		67.6	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.7	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.0	D (26%-138%)
37Cl-2,3,7,8-TCDD		121	D (35%-197%)		
6086003	SFRA-33	13C-2,3,7,8-TCDD		82.0	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		82.2	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		75.5	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.4	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.0	D (23%-140%)
		13C-OCDD		76.3	D (17%-157%)
		13C-2,3,7,8-TCDF		79.6	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		79.2	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		80.7	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.2	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.1	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.9	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		61.8	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.5	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.3	D (26%-138%)
37Cl-2,3,7,8-TCDD		127	D (35%-197%)		

* Recovery outside Acceptance Limits

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6086

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6086

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25866

Matrix: SOLID

Lab Sample ID: 12010371

Instrument: HRP750

Analysis Date: 05/07/2014 09:22

Dilution: 1

Analyst: JTF

Prep Batch ID: 25866

Batch ID: 25868

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.9	109	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	98.9	98.9	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	96.7	96.7	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	101	101	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	103	103	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	100	100	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	204	102	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.2	90.9	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	101	101	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	96.4	96.4	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	101	101	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	97.9	97.9	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	101	101	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	104	104	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	98.2	98.2	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	99.1	99.1	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	184	91.8	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6086 **Sample Type:** Laboratory Control Sample Duplicate
Client ID: LCSD for batch 25866 **Matrix:** SOLID
Lab Sample ID: 12010372
Instrument: HRP750 **Analysis Date:** 05/07/2014 10:09 **Dilution:** 1
Analyst: JTF **Prep Batch ID:** 25866
Batch ID: 25868

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.9	104	67-158	4.69	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	99.9	99.9	70-142	0.970	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	97.1	97.1	70-164	0.469	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	105	105	76-134	4.40	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	107	107	64-162	3.77	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	97.8	97.8	70-140	2.30	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	201	101	78-144	1.33	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.7	93.6	75-158	2.94	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	96.2	96.2	80-134	5.20	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	98.0	98	68-160	1.63	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	97.7	97.7	72-134	3.06	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	100	100	84-130	2.19	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	104	104	70-156	2.85	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	104	104	78-130	0.434	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	102	102	82-122	4.19	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	99.8	99.8	78-138	0.756	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	179	89.4	63-170	2.67	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6086 Client: TETR001 Matrix: SOLID
Client ID: MB for batch 25866 Instrument ID: HRP750 Data File: A07MAY14A-4
Lab Sample ID: 12010370 Prep Date: 05-MAY-14 Analyzed: 05/07/14 10:56
Column:

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25866	12010371	A07MAY14A-2	05/07/14	0922
02 LCSD for batch 25866	12010372	A07MAY14A-3	05/07/14	1009
03 SFRA-32	6086002	A07MAY14A-5	05/07/14	1144
04 SFRA-31	6086001	A07MAY14A-6	05/07/14	1232
05 SFRA-33	6086003	A07MAY14A-7	05/07/14	1319
06 SFRA-32	6086002	b07may14f_2-3	05/07/14	2013
07 SFRA-33	6086003	b07may14f_2-5	05/07/14	2052

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010370		Matrix: SOLID
Client Sample: QC for batch 25866		
Client ID: MB for batch 25866		Prep Basis: As Received
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 10:56	Analyst: JTF	Instrument: HRP750
Data File: A07MAY14A-4		Dilution: 1
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.274	pg/g	0.132	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.264	pg/g	0.264	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.188	pg/g	0.188	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.195	pg/g	0.195	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.322	pg/g	0.204	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.430	pg/g	0.308	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	1.65	pg/g	0.542	10.0
51207-31-9	2,3,7,8-TCDF	U	.142	pg/g	0.142	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.266	pg/g	0.266	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.258	pg/g	0.258	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.314	pg/g	0.155	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.31	pg/g	0.310	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.250	pg/g	0.150	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.452	pg/g	0.248	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.336	pg/g	0.336	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.282	pg/g	0.282	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.564	pg/g	0.522	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		164	200	pg/g	82.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		173	200	pg/g	86.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		169	200	pg/g	84.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		167	200	pg/g	83.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		176	200	pg/g	87.9	(23%-140%)
13C-OCDD		341	400	pg/g	85.4	(17%-157%)
13C-2,3,7,8-TCDF		165	200	pg/g	82.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		163	200	pg/g	81.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		163	200	pg/g	81.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		157	200	pg/g	78.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		155	200	pg/g	77.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		158	200	pg/g	79.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		137	200	pg/g	68.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		167	200	pg/g	83.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		150	200	pg/g	74.9	(26%-138%)
37Cl-2,3,7,8-TCDD		18.4	20.0	pg/g	92.1	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010371		Matrix: SOLID
Client Sample: QC for batch 25866		
Client ID: LCS for batch 25866		Prep Basis: As Received
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 09:22	Analyst: JTF	Instrument: HRP750
Data File: A07MAY14A-2		Dilution: 1
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.9	pg/g	0.143	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.9	pg/g	0.308	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.7	pg/g	0.400	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		101	pg/g	0.426	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		103	pg/g	0.440	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		100	pg/g	0.770	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		204	pg/g	1.37	10.0
51207-31-9	2,3,7,8-TCDF		18.2	pg/g	0.200	1.00
57117-41-6	1,2,3,7,8-PeCDF		101	pg/g	0.378	5.00
57117-31-4	2,3,4,7,8-PeCDF		96.4	pg/g	0.358	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		101	pg/g	0.552	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		97.9	pg/g	0.526	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		101	pg/g	0.506	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		104	pg/g	0.930	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		98.2	pg/g	0.212	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.1	pg/g	0.394	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		184	pg/g	1.39	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		148	200	pg/g	74.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		155	200	pg/g	77.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		154	200	pg/g	77.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		164	200	pg/g	82.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		161	200	pg/g	80.3	(22%-166%)
13C-OCDD		296	400	pg/g	74.0	(13%-199%)
13C-2,3,7,8-TCDF		151	200	pg/g	75.4	(22%-152%)
13C-1,2,3,7,8-PeCDF		142	200	pg/g	70.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		147	200	pg/g	73.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		146	200	pg/g	72.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		147	200	pg/g	73.6	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		152	200	pg/g	75.9	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		124	200	pg/g	61.9	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		156	200	pg/g	77.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		137	200	pg/g	68.7	(20%-186%)
37Cl-2,3,7,8-TCDD		17.3	20.0	pg/g	86.3	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6086	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010372		Matrix: SOLID
Client Sample: QC for batch 25866		
Client ID: LCSD for batch 25866		Prep Basis: As Received
Batch ID: 25868	Method: EPA Method 1613B	
Run Date: 05/07/2014 10:09	Analyst: JTF	Instrument: HRP750
Data File: A07MAY14A-3		Dilution: 1
Prep Batch: 25866	Prep Method: SW846 3540C	
Prep Date: 05-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.165	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.9	pg/g	0.210	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		97.1	pg/g	0.746	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		105	pg/g	0.806	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		107	pg/g	0.826	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		97.8	pg/g	0.752	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		201	pg/g	1.21	10.0
51207-31-9	2,3,7,8-TCDF		18.7	pg/g	0.206	1.00
57117-41-6	1,2,3,7,8-PeCDF		96.2	pg/g	0.308	5.00
57117-31-4	2,3,4,7,8-PeCDF		98.0	pg/g	0.292	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		97.7	pg/g	0.670	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		100	pg/g	0.650	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		104	pg/g	0.708	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		104	pg/g	1.09	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		102	pg/g	0.234	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.8	pg/g	0.446	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		179	pg/g	1.35	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		143	200	pg/g	71.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		157	200	pg/g	78.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		155	200	pg/g	77.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		157	200	pg/g	78.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		163	200	pg/g	81.3	(22%-166%)
13C-OCDD		303	400	pg/g	75.8	(13%-199%)
13C-2,3,7,8-TCDF		146	200	pg/g	72.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		155	200	pg/g	77.4	(21%-192%)
13C-2,3,4,7,8-PeCDF		150	200	pg/g	75.1	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		145	200	pg/g	72.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		145	200	pg/g	72.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		146	200	pg/g	72.9	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		123	200	pg/g	61.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		153	200	pg/g	76.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		134	200	pg/g	66.9	(20%-186%)
37Cl-2,3,7,8-TCDD		15.9	20.0	pg/g	79.6	(31%-191%)

Comments:

May 14, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6106

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 09, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request
 CFA Work Order Number: 6106

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc Phone #: 314-577-6798

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strocker Forest Removal Action Fax #:

Address: 20 Jamestown Farm Drive

Collected by: RC Kaylor Send Results To: davekinroth@charter.net

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers											Preservative Type (6)	Comments Note: extra sample is required for sample specific QC				
<u>SFRA-37</u>	<u>25-08-14</u>	<u>1355</u>			<u>Soil</u>	<u>1</u>	<u>X</u>															
<u>SFRA-38</u>	↓	<u>1340</u>			<u>Soil</u>	<u>1</u>	<u>X</u>															
<u>SFRA-39</u>	↓	<u>1344</u>			<u>Soil</u>	<u>1</u>	<u>X</u>															

TAT Requested: Normal: Rush: X Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>Rob Chytra</u>	<u>5-8-14</u>	<u>1525</u>	<u>Cynde Larkins</u>	<u>09MAY14</u>	<u>1040</u>

CFA PM: Cynde Larkins
 Method of Shipment: FedEx Date Shipped: 5-8-14
 Airbill #: 804231570907
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
4.6 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 6106
Received By: Cynde Larkins	Date/Time Received: 09 MAY 14 1040

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples < 2x background?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: ice bags blue ice dry ice none other (describe) 4.6°C
4 Samples requiring chemical preservation at proper pH?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected and pH observed: If preservative added, Lot#:
5 Samples requiring preservation have no residual chlorine?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected: If preservative added, Lot#:
6 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, tests affected:
7 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
8 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
9 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
10 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

Checklist performed by: Initials: **CL** Date: **09 MAY 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6106**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25908
Clean Up Batch Number: 25901
Extraction Batch Number: 25900

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6106001	SFRA-37
6106002	SFRA-38
6106003	SFRA-39
12010394	Method Blank (MB)
12010395	Laboratory Control Sample (LCS)
12010396	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 25908.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

Sample 6106001 (SFRA-37)- Batch 25908 was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6106 CFA Work Order: 6106

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 14 MAY 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 6106001	Date Collected: 05/08/2014 13:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/09/2014 10:40	%Moisture: 21.3
Client ID: SFRA-37		Prep Basis: Dry Weight
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 19:56	Analyst: JTF	Instrument: HRP750
Data File: A13MAY14D-5		Dilution: 5
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		6680	pg/g	9.17	60.5
40321-76-4	1,2,3,7,8-PeCDD	U	7.84	pg/g	7.84	302
39227-28-6	1,2,3,4,7,8-HxCDD	U	15	pg/g	15.0	302
57653-85-7	1,2,3,6,7,8-HxCDD	J	30.6	pg/g	15.4	302
19408-74-3	1,2,3,7,8,9-HxCDD	J	17.4	pg/g	16.1	302
35822-46-9	1,2,3,4,6,7,8-HpCDD		754	pg/g	24.2	302
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11900	pg/g	74.5	605
51207-31-9	2,3,7,8-TCDF	J	35.4	pg/g	12.2	60.5
57117-41-6	1,2,3,7,8-PeCDF	U	5.73	pg/g	5.73	302
57117-31-4	2,3,4,7,8-PeCDF	U	6.02	pg/g	6.02	302
70648-26-9	1,2,3,4,7,8-HxCDF	U	14	pg/g	14.0	302
57117-44-9	1,2,3,6,7,8-HxCDF	U	7.77	pg/g	7.77	302
60851-34-5	2,3,4,6,7,8-HxCDF	J	11.0	pg/g	7.19	302
72918-21-9	1,2,3,7,8,9-HxCDF	U	12	pg/g	12.0	302
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	110	pg/g	0.121	302
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	5.93	pg/g	0.226	302
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	175	pg/g	35.1	605

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1680	2420	pg/g	69.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1760	2420	pg/g	72.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1800	2420	pg/g	74.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2010	2420	pg/g	83.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1590	2420	pg/g	65.6	(23%-140%)
13C-OCDD		2680	4840	pg/g	55.5	(17%-157%)
13C-2,3,7,8-TCDF		1780	2420	pg/g	73.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1920	2420	pg/g	79.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1640	2420	pg/g	67.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1760	2420	pg/g	72.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1830	2420	pg/g	75.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1800	2420	pg/g	74.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1450	2420	pg/g	60.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1560	2420	pg/g	64.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1290	2420	pg/g	53.4	(26%-138%)
37Cl-2,3,7,8-TCDD		230	242	pg/g	95.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 6106002	Date Collected: 05/08/2014 13:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/09/2014 10:40	%Moisture: 21.8
Client ID: SFRA-38		Prep Basis: Dry Weight
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 20:44	Analyst: JTF	Instrument: HRP750
Data File: A13MAY14D-6		Dilution: 1
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2560	pg/g	2.02	10.7
40321-76-4	1,2,3,7,8-PeCDD	U	2.21	pg/g	2.21	53.7
39227-28-6	1,2,3,4,7,8-HxCDD	J	5.13	pg/g	4.08	53.7
57653-85-7	1,2,3,6,7,8-HxCDD	J	21.6	pg/g	4.19	53.7
19408-74-3	1,2,3,7,8,9-HxCDD	J	10.7	pg/g	4.38	53.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		382	pg/g	7.22	53.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9700	pg/g	19.6	107
51207-31-9	2,3,7,8-TCDF		15.2	pg/g	2.73	10.7
57117-41-6	1,2,3,7,8-PeCDF	J	5.43	pg/g	1.65	53.7
57117-31-4	2,3,4,7,8-PeCDF	J	2.99	pg/g	1.45	53.7
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.29	pg/g	1.74	53.7
57117-44-9	1,2,3,6,7,8-HxCDF	J	3.27	pg/g	1.82	53.7
60851-34-5	2,3,4,6,7,8-HxCDF	J	4.36	pg/g	1.89	53.7
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.92	pg/g	2.92	53.7
67562-39-4	1,2,3,4,6,7,8-HpCDF		63.7	pg/g	0.425	53.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	5.13	pg/g	0.765	53.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	97.0	pg/g	13.9	107

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1810	2150	pg/g	84.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1710	2150	pg/g	79.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1770	2150	pg/g	82.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1920	2150	pg/g	89.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1720	2150	pg/g	79.9	(23%-140%)
13C-OCDD		3250	4300	pg/g	75.7	(17%-157%)
13C-2,3,7,8-TCDF		1740	2150	pg/g	81.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1630	2150	pg/g	75.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1710	2150	pg/g	79.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1750	2150	pg/g	81.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1770	2150	pg/g	82.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1830	2150	pg/g	85.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1650	2150	pg/g	76.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1620	2150	pg/g	75.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1400	2150	pg/g	65.2	(26%-138%)
37Cl-2,3,7,8-TCDD		227	215	pg/g	106	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 6106002	Date Collected: 05/08/2014 13:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/09/2014 10:40	%Moisture: 21.8
Client ID: SFRA-38		Prep Basis: Dry Weight
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 12:06	Analyst: JTF	Instrument: HRP763
Data File: b13may14a-5		Dilution: 1
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		15.1	pg/g	5.69	10.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 6106003	Date Collected: 05/08/2014 13:44	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/09/2014 10:40	%Moisture: 20.6
Client ID: SFRA-39		Prep Basis: Dry Weight
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 21:32	Analyst: JTF	Instrument: HRP750
Data File: A13MAY14D-7		Dilution: 1
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3200	pg/g	2.02	12.3
40321-76-4	1,2,3,7,8-PeCDD	U	2.57	pg/g	2.57	61.7
39227-28-6	1,2,3,4,7,8-HxCDD	J	4.59	pg/g	3.43	61.7
57653-85-7	1,2,3,6,7,8-HxCDD	J	27.9	pg/g	3.50	61.7
19408-74-3	1,2,3,7,8,9-HxCDD	J	10.4	pg/g	3.70	61.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		482	pg/g	7.16	61.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11300	pg/g	15.1	123
51207-31-9	2,3,7,8-TCDF		21.2	pg/g	2.67	12.3
57117-41-6	1,2,3,7,8-PeCDF	J	6.17	pg/g	1.82	61.7
57117-31-4	2,3,4,7,8-PeCDF	J	3.33	pg/g	1.94	61.7
70648-26-9	1,2,3,4,7,8-HxCDF	J	9.58	pg/g	1.94	61.7
57117-44-9	1,2,3,6,7,8-HxCDF	U	4.52	pg/g	4.52	61.7
60851-34-5	2,3,4,6,7,8-HxCDF	U	5.82	pg/g	5.82	61.7
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.99	pg/g	2.99	61.7
67562-39-4	1,2,3,4,6,7,8-HpCDF		79.1	pg/g	1.04	61.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	5.65	pg/g	5.65	61.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	121	pg/g	5.26	123

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1880	2470	pg/g	76.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1800	2470	pg/g	72.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2080	2470	pg/g	84.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2040	2470	pg/g	82.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1950	2470	pg/g	79.1	(23%-140%)
13C-OCDD		3570	4940	pg/g	72.4	(17%-157%)
13C-2,3,7,8-TCDF		2020	2470	pg/g	81.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	2470	pg/g	77.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1720	2470	pg/g	69.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1960	2470	pg/g	79.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1980	2470	pg/g	80.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2060	2470	pg/g	83.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1790	2470	pg/g	72.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1750	2470	pg/g	71.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1560	2470	pg/g	63.3	(26%-138%)
37Cl-2,3,7,8-TCDD		243	247	pg/g	98.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 6106003	Date Collected: 05/08/2014 13:44	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/09/2014 10:40	%Moisture: 20.6
Client ID: SFRA-39		Prep Basis: Dry Weight
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 12:25	Analyst: JTF	Instrument: HRP763
Data File: b13may14a-6		Dilution: 1
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		27.8	pg/g	6.22	12.3

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6106

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010395	LCS for batch 25900	13C-2,3,7,8-TCDD		79.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		72.8	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		86.6	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.9	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		77.0	(22%-166%)
		13C-OCDD		63.3	(13%-199%)
		13C-2,3,7,8-TCDF		83.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		75.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		70.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		83.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.7	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		84.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		70.4	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		72.1	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		61.6	(20%-186%)
		37Cl-2,3,7,8-TCDD		98.4	(31%-191%)
12010396	LCSD for batch 25900	13C-2,3,7,8-TCDD		65.6	(20%-175%)
		13C-1,2,3,7,8-PeCDD		60.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		74.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		75.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		68.5	(22%-166%)
		13C-OCDD		61.0	(13%-199%)
		13C-2,3,7,8-TCDF		75.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		63.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		59.0	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		71.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		72.3	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		71.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		62.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		64.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		56.8	(20%-186%)
		37Cl-2,3,7,8-TCDD		79.5	(31%-191%)
12010394	MB for batch 25900	13C-2,3,7,8-TCDD		65.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		60.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		67.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		69.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		61.0	(23%-140%)
		13C-OCDD		52.2	(17%-157%)
		13C-2,3,7,8-TCDF		67.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		60.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		58.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		66.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		65.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		66.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		58.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		58.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		49.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		101	(35%-197%)
6106001	SFRA-37	13C-2,3,7,8-TCDD		69.2	D (25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6106

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6106001	SFRA-37	13C-1,2,3,7,8-PeCDD		72.8 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		74.5 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.2 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		65.6 D	(23%-140%)
		13C-OCDD		55.5 D	(17%-157%)
		13C-2,3,7,8-TCDF		73.7 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		79.4 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		67.9 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.9 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.7 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		74.3 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		60.0 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		64.3 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		53.4 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		95.2 D	(35%-197%)
6106002	SFRA-38	13C-2,3,7,8-TCDD		84.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.9	(23%-140%)
		13C-OCDD		75.7	(17%-157%)
		13C-2,3,7,8-TCDF		81.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		75.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		79.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		82.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		76.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		65.2	(26%-138%)
37Cl-2,3,7,8-TCDD		106	(35%-197%)		
6106003	SFRA-39	13C-2,3,7,8-TCDD		76.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		72.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.1	(23%-140%)
		13C-OCDD		72.4	(17%-157%)
		13C-2,3,7,8-TCDF		81.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		77.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		69.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		72.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		71.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		63.3	(26%-138%)
37Cl-2,3,7,8-TCDD		98.3	(35%-197%)		

* Recovery outside Acceptance Limits

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6106

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits
Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6106

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25900

Matrix: SOLID

Lab Sample ID: 12010395

Instrument: HRP750

Analysis Date: 05/13/2014 17:33

Dilution: 1

Analyst: JTF

Prep Batch ID: 25900

Batch ID: 25908

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.9	105	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	98.3	98.3	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	95.7	95.7	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	102	102	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	103	103	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	95.2	95.2	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	190	95.1	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	17.7	88.4	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	91.2	91.2	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	92.3	92.3	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	94.6	94.6	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	97.6	97.6	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	90.9	90.9	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	99.0	99	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	94.2	94.2	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	96.0	96	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	173	86.4	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6106

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25900

Matrix: SOLID

Lab Sample ID: 12010396

Instrument: HRP750

Analysis Date: 05/13/2014 18:21

Dilution: 1

Analyst: JTF

Prep Batch ID: 25900

Batch ID: 25908

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.6	103	67-158	1.46	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	99.3	99.3	70-142	1.10	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	95.8	95.8	70-164	0.102	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	103	103	76-134	1.70	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	106	106	64-162	2.95	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	96.8	96.8	70-140	1.70	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	197	98.5	78-144	3.49	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	17.4	86.9	75-158	1.73	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	91.2	91.2	80-134	0.0329	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	91.3	91.3	68-160	1.10	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	94.1	94.1	72-134	0.466	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	96.8	96.8	84-130	0.801	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	96.9	96.9	70-156	6.36	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	99.9	99.9	78-130	0.871	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	96.2	96.2	82-122	2.12	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	95.9	95.9	78-138	0.125	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	173	86.6	63-170	0.257	0-20

Method Blank Summary

SDG Number: 6106
 Client ID: MB for batch 25900
 Lab Sample ID: 12010394
 Column:

Client: TETR001
 Instrument ID: HRP750
 Prep Date: 09-MAY-14

Matrix: SOLID
 Data File: A13MAY14D-4
 Analyzed: 05/13/14 19:09

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 SFRA-38	6106002	b13may14a-5	05/13/14	1206
02 SFRA-39	6106003	b13may14a-6	05/13/14	1225
03 LCS for batch 25900	12010395	A13MAY14D-2	05/13/14	1733
04 LCSD for batch 25900	12010396	A13MAY14D-3	05/13/14	1821
05 SFRA-37	6106001	A13MAY14D-5	05/13/14	1956
06 SFRA-38	6106002	A13MAY14D-6	05/13/14	2044
07 SFRA-39	6106003	A13MAY14D-7	05/13/14	2132

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010394		Matrix: SOLID
Client Sample: QC for batch 25900		
Client ID: MB for batch 25900		Prep Basis: As Received
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 19:09	Analyst: JTF	Instrument: HRP750
Data File: A13MAY14D-4		Dilution: 1
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.172	pg/g	0.172	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.214	pg/g	0.127	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.19	pg/g	0.190	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.228	pg/g	0.228	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.2	pg/g	0.200	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.2	pg/g	0.200	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.822	pg/g	0.352	10.0
51207-31-9	2,3,7,8-TCDF	U	.0998	pg/g	0.0998	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.228	pg/g	0.228	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.184	pg/g	0.0764	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.184	pg/g	0.184	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.16	pg/g	0.160	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.138	pg/g	0.138	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.284	pg/g	0.178	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.130	pg/g	0.0085	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.082	pg/g	0.0164	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.36	pg/g	0.360	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		130	200	pg/g	65.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		120	200	pg/g	60.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		136	200	pg/g	67.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		139	200	pg/g	69.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		122	200	pg/g	61.0	(23%-140%)
13C-OCDD		209	400	pg/g	52.2	(17%-157%)
13C-2,3,7,8-TCDF		135	200	pg/g	67.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		120	200	pg/g	60.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		117	200	pg/g	58.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		132	200	pg/g	66.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		131	200	pg/g	65.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		132	200	pg/g	66.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		117	200	pg/g	58.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		117	200	pg/g	58.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		99.3	200	pg/g	49.7	(26%-138%)
37Cl-2,3,7,8-TCDD		20.2	20.0	pg/g	101	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010395		Matrix: SOLID
Client Sample: QC for batch 25900		
Client ID: LCS for batch 25900		Prep Basis: As Received
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 17:33	Analyst: JTF	Instrument: HRP750
Data File: A13MAY14D-2		Dilution: 1
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.113	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.3	pg/g	0.254	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.7	pg/g	0.418	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	0.430	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		103	pg/g	0.450	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.2	pg/g	0.530	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		190	pg/g	1.23	10.0
51207-31-9	2,3,7,8-TCDF		17.7	pg/g	0.130	1.00
57117-41-6	1,2,3,7,8-PeCDF		91.2	pg/g	0.220	5.00
57117-31-4	2,3,4,7,8-PeCDF		92.3	pg/g	0.238	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		94.6	pg/g	0.434	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		97.6	pg/g	0.456	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		90.9	pg/g	0.446	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		99.0	pg/g	0.722	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		94.2	pg/g	0.378	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.0	pg/g	0.702	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		173	pg/g	1.05	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		160	200	pg/g	79.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		146	200	pg/g	72.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		173	200	pg/g	86.6	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		172	200	pg/g	85.9	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		154	200	pg/g	77.0	(22%-166%)
13C-OCDD		253	400	pg/g	63.3	(13%-199%)
13C-2,3,7,8-TCDF		167	200	pg/g	83.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		150	200	pg/g	75.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		141	200	pg/g	70.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		166	200	pg/g	83.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		161	200	pg/g	80.7	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		169	200	pg/g	84.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		141	200	pg/g	70.4	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		144	200	pg/g	72.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		123	200	pg/g	61.6	(20%-186%)
37Cl-2,3,7,8-TCDD		19.7	20.0	pg/g	98.4	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6106	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010396		Matrix: SOLID
Client Sample: QC for batch 25900		
Client ID: LCSD for batch 25900		Prep Basis: As Received
Batch ID: 25908	Method: EPA Method 1613B	
Run Date: 05/13/2014 18:21	Analyst: JTF	Instrument: HRP750
Data File: A13MAY14D-3		Dilution: 1
Prep Batch: 25900	Prep Method: SW846 3540C	
Prep Date: 09-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.6	pg/g	0.0952	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.3	pg/g	0.216	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.8	pg/g	0.356	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		103	pg/g	0.358	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		106	pg/g	0.378	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.8	pg/g	0.456	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		197	pg/g	0.988	10.0
51207-31-9	2,3,7,8-TCDF		17.4	pg/g	0.107	1.00
57117-41-6	1,2,3,7,8-PeCDF		91.2	pg/g	0.216	5.00
57117-31-4	2,3,4,7,8-PeCDF		91.3	pg/g	0.246	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		94.1	pg/g	0.506	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		96.8	pg/g	0.474	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		96.9	pg/g	0.506	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		99.9	pg/g	0.766	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		96.2	pg/g	0.174	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		95.9	pg/g	0.318	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		173	pg/g	0.824	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		131	200	pg/g	65.6	(20%-175%)
13C-1,2,3,7,8-PeCDD		121	200	pg/g	60.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		149	200	pg/g	74.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		150	200	pg/g	75.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		137	200	pg/g	68.5	(22%-166%)
13C-OCDD		244	400	pg/g	61.0	(13%-199%)
13C-2,3,7,8-TCDF		151	200	pg/g	75.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		127	200	pg/g	63.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		118	200	pg/g	59.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		142	200	pg/g	71.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		145	200	pg/g	72.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		142	200	pg/g	71.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		126	200	pg/g	62.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		128	200	pg/g	64.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		114	200	pg/g	56.8	(20%-186%)
37Cl-2,3,7,8-TCDD		15.9	20.0	pg/g	79.5	(31%-191%)

Comments:



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Ugci wniGpxkqpo gpvniVgej pqmji lgu."fpeqtr qtcvgf""

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*****Ecr g'Hgct "Cpcn{ vlecnNNE" *EHC +er r tgelevgu'vj g'qr r qt wplk{ 'q'r tqxkf g'vj g'gpenqugf "cpcn{ vlecnl guwuu' hqt' 'vj g'uco r rg'u+y g'tgegkxgf qp"O c{ "38."42360Vj ku'qtki kpcnlf cvc'tgr qt vj cu'dggp'r tgr ctgf "cpf 't gxlgy gf "lp"ceeqtf cpeg'y kj 'EHCai'ucpf ct' "qr gt cvpi 'r tqegf wgu0

*****Qw'r qnle{ 'ku'q'r tqxkf g'j ki j 's wcnk{ .r gtuqpcrk gf "cpcn{ vlecnl ugt xlegu'q' gpcdnq" { qw'q'o ggv' { qw'cpcn{ vlecnl pggf u'qp' 'ko g'gxgt { "ko g0 Y g'tvuu'vj cv' { qw'y knl kpf "gxgt { vj kpi 'lp'qtf gt "cp' "q" { qw'ucvuhcevkp0ki' { qw'j cxg'cp { 's vguwkpu.'r rncug'f q'p'qv'j gukscv'q'ecni'o g'cv ; 32/9; 7/26430"

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E { p'j lc'Netnikpu

Rt q'geV'O epci gt

"

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Rwtej cug"Qtf gt<32; 866"

Gpenquwtgu"

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number (1):
 PO Number:

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

CFA Work Order Number: 6123

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc Phone #: 314-517-6798

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action Fax #:
 Address: 20 Jamestown Farm DR Florissant Mo 63024
 Collected by: R Clayton Send Results To: dave.kinroth@charter.net

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers	Sample Analysis Requested (5)										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC					
<u>SFRA - 40</u>	<u>05-15-14</u>	<u>0830</u>			<u>Soil</u>	<u>1</u>	<u>X</u>																
<u>SFRA - 41</u>	<u>05-15-14</u>	<u>1450</u>			<u>Soil</u>	<u>1</u>	<u>X</u>																

TAT Requested: Normal: Rush: X Specify: 72hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>Pat Clayton</u>	<u>5-15-14</u>	<u>1600</u>	<u>[Signature]</u>	<u>16 MAY 14</u>	<u>1000</u>

Sample Shipping and Delivery Details

CFA PM:
 Method of Shipment: Fed Ex Date Shipped: 5-15-14
 Airbill #: 8042 3157 0892
 Airbill #:

1.) Chain of Custody Number = Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or- N - for sample was not field filtered.
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
10.1 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

High Resolution Dioxins and Furans Analysis

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: Tetra Tech Work Order: 6123

Shipping Company: Fed Ex Date/Time Received: 16 MAY 14 1000

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			
Samples < 2x background?			

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?			<input checked="" type="checkbox"/>	Preservation Method: ice bags blue ice dry ice none other(describe) <u>10.1</u>
4 Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

72 hr TAT

Checklist performed by: Initials: [Signature] Date: 16 MAY 14

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6123**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25941
Clean Up Batch Number: 25938
Extraction Batch Number: 25937

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6123001	SFRA-40
6123002	SFRA-41
12010433	Method Blank (MB)
12010434	Laboratory Control Sample (LCS)
12010435	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Dilutions

Sample 6123002 (SFRA-41)- Batch 25941 was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Preparation/Analytical Method Verification

A 1g aliquot was used for extraction based on known high levels of target analytes from this site. –Batch 25941.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

VGVT223"Vgvtc"Vgej "GO "Kpeqtr qtcvgf
ErkgpvUF I <8345"EHC"Y qtnlQtf gt<8345

The Qualifiers in this report are defined as follows:

, ""C"s wcrk{ 'eqpvtqnl'cpcn{ vg'tgeqxgt { 'ku'qwukf g'qh'ur gekhgf "ceegr vcpag'etkgtlc
, , ""Cpcn{ vg'ku'c'lwttqi cvg'eqo r qwpf
L""Xcwg'ku'guko cvgf
M""Guko cvgf 'O czko wo 'Rquikdr'Eqpepvtcvqp
W""Cpcn{ vg'y cu'cpcn{ | gf 'hqt.'dw'pqvf gvgvfg 'cdqyg'vj g'ur gekhgf 'f gvgvqp'iko k0

Review/Validation

Ecr g"Hgct"Cpcn{ vccn'tgs wkt gu'cni'cpcn{ vccn'f cvc'vq'dg'xgtkhgf "d{ "c"s wcrk{ 'f cvc'tgxky gt0
Vj g'hqmny lpi 'f cvc'xcn'f cvqt'xgtkhgf "vj g'lpqto cvqp'r tguqpvfg 'lp'vj ku'ecug'pcttcvkg<

Signature:



Name: Heather Patterson

Date: 21 MAY 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6123	Client: TETR001	Project: TETR00114
Lab Sample ID: 6123001	Date Collected: 05/15/2014 08:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/16/2014 10:00	%Moisture: 29.5
Client ID: SFRA-40		Prep Basis: Dry Weight
Batch ID: 25941	Method: EPA Method 1613B	
Run Date: 05/19/2014 22:36	Analyst: JTF	Instrument: HRP750
Data File: A19MAY14B-11		Dilution: 1
Prep Batch: 25937	Prep Method: SW846 3540C	
Prep Date: 16-MAY-14	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		163	pg/g	2.01	13.8
40321-76-4	1,2,3,7,8-PeCDD	U	3.72	pg/g	3.72	68.9
39227-28-6	1,2,3,4,7,8-HxCDD	J	56.3	pg/g	7.80	68.9
57653-85-7	1,2,3,6,7,8-HxCDD		87.8	pg/g	8.08	68.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	23.5	pg/g	8.41	68.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		1880	pg/g	25.6	68.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		21500	pg/g	51.8	138
51207-31-9	2,3,7,8-TCDF	J	4.93	pg/g	3.25	13.8
57117-41-6	1,2,3,7,8-PeCDF	U	3.06	pg/g	3.06	68.9
57117-31-4	2,3,4,7,8-PeCDF	J	7.39	pg/g	2.92	68.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	24.9	pg/g	4.82	68.9
57117-44-9	1,2,3,6,7,8-HxCDF	U	8.46	pg/g	8.46	68.9
60851-34-5	2,3,4,6,7,8-HxCDF	J	17.1	pg/g	4.82	68.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	8.13	pg/g	8.13	68.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		269	pg/g	6.70	68.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	29.5	pg/g	10.7	68.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		624	pg/g	14.9	138

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1960	2760	pg/g	71.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		2180	2760	pg/g	79.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1730	2760	pg/g	62.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2150	2760	pg/g	78.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1990	2760	pg/g	72.2	(23%-140%)
13C-OCDD		3600	5510	pg/g	65.3	(17%-157%)
13C-2,3,7,8-TCDF		2040	2760	pg/g	74.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		2210	2760	pg/g	80.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2140	2760	pg/g	77.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1920	2760	pg/g	69.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2110	2760	pg/g	76.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2040	2760	pg/g	74.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1720	2760	pg/g	62.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1990	2760	pg/g	72.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1870	2760	pg/g	67.7	(26%-138%)
37Cl-2,3,7,8-TCDD		259	276	pg/g	93.8	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6123	Client: TETR001	Project: TETR00114
Lab Sample ID: 6123002	Date Collected: 05/15/2014 14:50	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/16/2014 10:00	%Moisture: 21.4
Client ID: SFRA-41		Prep Basis: Dry Weight
Batch ID: 25941	Method: EPA Method 1613B	
Run Date: 05/21/2014 11:30	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_4-6		Dilution: 10
Prep Batch: 25937	Prep Method: SW846 3540C	
Prep Date: 16-MAY-14	Prep Aliquot: 1.32 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		13300	pg/g	9.74	96.4
40321-76-4	1,2,3,7,8-PeCDD	U	13.1	pg/g	13.1	482
39227-28-6	1,2,3,4,7,8-HxCDD	J	23.7	pg/g	12.6	482
57653-85-7	1,2,3,6,7,8-HxCDD	J	88.5	pg/g	11.9	482
19408-74-3	1,2,3,7,8,9-HxCDD	J	28.5	pg/g	13.0	482
35822-46-9	1,2,3,4,6,7,8-HpCDD		1280	pg/g	21.6	482
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14500	pg/g	49.4	964
51207-31-9	2,3,7,8-TCDF	J	69.1	pg/g	10.0	96.4
57117-41-6	1,2,3,7,8-PeCDF	U	9.26	pg/g	9.26	482
57117-31-4	2,3,4,7,8-PeCDF	U	8.83	pg/g	8.83	482
70648-26-9	1,2,3,4,7,8-HxCDF	J	44.7	pg/g	9.74	482
57117-44-9	1,2,3,6,7,8-HxCDF	J	16.9	pg/g	9.41	482
60851-34-5	2,3,4,6,7,8-HxCDF	J	21.4	pg/g	10.2	482
72918-21-9	1,2,3,7,8,9-HxCDF	U	16.2	pg/g	16.2	482
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	376	pg/g	9.47	482
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	40.5	pg/g	15.9	482
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	567	pg/g	20.8	964

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1430	1930	pg/g	74.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		1460	1930	pg/g	75.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1340	1930	pg/g	69.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1350	1930	pg/g	70.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1440	1930	pg/g	74.4	(23%-140%)
13C-OCDD		2700	3860	pg/g	70.0	(17%-157%)
13C-2,3,7,8-TCDF		1600	1930	pg/g	83.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1500	1930	pg/g	77.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1520	1930	pg/g	79.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1400	1930	pg/g	72.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1340	1930	pg/g	69.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1390	1930	pg/g	72.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1240	1930	pg/g	64.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1460	1930	pg/g	75.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1430	1930	pg/g	73.9	(26%-138%)
37Cl-2,3,7,8-TCDD		201	193	pg/g	104	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6123

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010434	LCS for batch 25937	13C-2,3,7,8-TCDD		75.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		75.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		69.0	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		87.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		69.1	(22%-166%)
		13C-OCDD		51.7	(13%-199%)
		13C-2,3,7,8-TCDF		79.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		78.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		77.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		71.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		84.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		75.8	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		65.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		73.4	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		63.6	(20%-186%)
		37Cl-2,3,7,8-TCDD		92.2	(31%-191%)
12010435	LCSD for batch 25937	13C-2,3,7,8-TCDD		77.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		76.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		68.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		89.4	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		72.4	(22%-166%)
		13C-OCDD		57.6	(13%-199%)
		13C-2,3,7,8-TCDF		81.6	(22%-152%)
		13C-1,2,3,7,8-PeCDF		80.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		79.6	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		73.2	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		81.2	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		77.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		66.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		75.3	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		65.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		88.2	(31%-191%)
12010433	MB for batch 25937	13C-2,3,7,8-TCDD		68.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		67.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		60.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		62.7	(23%-140%)
		13C-OCDD		51.6	(17%-157%)
		13C-2,3,7,8-TCDF		74.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		70.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		68.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		66.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		71.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		59.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		67.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		57.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		80.5	(35%-197%)
6123001	SFRA-40	13C-2,3,7,8-TCDD		71.0	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6123

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6123001	SFRA-40	13C-1,2,3,7,8-PeCDD		79.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		62.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		72.2	(23%-140%)
		13C-OCDD		65.3	(17%-157%)
		13C-2,3,7,8-TCDF		74.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		77.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		69.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		74.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		62.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		72.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		67.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		93.8	(35%-197%)
6123002	SFRA-41	13C-2,3,7,8-TCDD		74.1	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		75.8	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		69.3	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		70.2	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		74.4	D (23%-140%)
		13C-OCDD		70.0	D (17%-157%)
		13C-2,3,7,8-TCDF		83.0	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		77.7	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		79.0	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.6	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.5	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		72.0	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		64.3	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.9	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.9	D (26%-138%)
37Cl-2,3,7,8-TCDD		104	D (35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6123

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 25937

Matrix: SOLID

Lab Sample ID: 12010434

Instrument: HRP750

Analysis Date: 05/19/2014 16:15

Dilution: 1

Analyst: JTF

Prep Batch ID: 25937

Batch ID: 25941

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.6	103	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	98.5	98.5	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	93.6	93.6	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	102	102	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	100	100	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	94.5	94.5	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	199	99.7	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.6	92.9	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	97.4	97.4	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	97.7	97.7	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	101	101	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	101	101	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	100	100	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	104	104	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	94.0	94	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	97.8	97.8	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	204	102	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6123

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25937

Matrix: SOLID

Lab Sample ID: 12010435

Instrument: HRP750

Analysis Date: 05/19/2014 17:02

Dilution: 1

Analyst: JTF

Prep Batch ID: 25937

Batch ID: 25941

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.4	102	67-158	1.10	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	102	102	70-142	4.01	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	101	101	70-164	7.26	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	98.7	98.7	76-134	3.20	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	103	103	64-162	2.33	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	95.9	95.9	70-140	1.47	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	198	99.2	78-144	0.461	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.2	91.2	75-158	1.86	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	98.9	98.9	80-134	1.54	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	98.6	98.6	68-160	0.966	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	97.9	97.9	72-134	2.69	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	101	101	84-130	0.427	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	99.0	99	70-156	1.21	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	105	105	78-130	0.779	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	97.8	97.8	82-122	3.90	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	99.0	99	78-138	1.20	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	213	106	63-170	4.19	0-20

Method Blank Summary

SDG Number: 6123 Client: TETR001 Matrix: SOLID
Client ID: MB for batch 25937 Instrument ID: HRP750 Data File: A19MAY14B-5
Lab Sample ID: 12010433 Prep Date: 16-MAY-14 Analyzed: 05/19/14 17:50
Column:

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25937	12010434	A19MAY14B-3	05/19/14	1615
02 LCSD for batch 25937	12010435	A19MAY14B-4	05/19/14	1702
03 SFRA-40	6123001	A19MAY14B-11	05/19/14	2236
04 SFRA-41	6123002	A20MAY14B_4-6	05/21/14	1130

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6123	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010433		Matrix: SOLID
Client Sample: QC for batch 25937		
Client ID: MB for batch 25937		Prep Basis: As Received
Batch ID: 25941	Method: EPA Method 1613B	
Run Date: 05/19/2014 17:50	Analyst: JTF	Instrument: HRP750
Data File: A19MAY14B-5		Dilution: 1
Prep Batch: 25937	Prep Method: SW846 3540C	
Prep Date: 16-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.122	pg/g	0.122	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.262	pg/g	0.262	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.29	pg/g	0.290	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.280	pg/g	0.208	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.356	pg/g	0.216	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.328	pg/g	0.328	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	1.47	pg/g	0.634	10.0
51207-31-9	2,3,7,8-TCDF	J	0.132	pg/g	0.106	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.324	pg/g	0.324	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.26	pg/g	0.260	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.308	pg/g	0.308	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.206	pg/g	0.114	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.206	pg/g	0.206	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.314	pg/g	0.230	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.268	pg/g	0.268	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.242	pg/g	0.184	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.558	pg/g	0.558	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		136	200	pg/g	68.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		136	200	pg/g	67.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		121	200	pg/g	60.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		152	200	pg/g	75.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		125	200	pg/g	62.7	(23%-140%)
13C-OCDD		206	400	pg/g	51.6	(17%-157%)
13C-2,3,7,8-TCDF		149	200	pg/g	74.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		142	200	pg/g	70.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		136	200	pg/g	68.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		132	200	pg/g	66.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		157	200	pg/g	78.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		143	200	pg/g	71.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		119	200	pg/g	59.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		134	200	pg/g	67.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		115	200	pg/g	57.5	(26%-138%)
37Cl-2,3,7,8-TCDD		16.1	20.0	pg/g	80.5	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6123	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010434		Matrix: SOLID
Client Sample: QC for batch 25937		
Client ID: LCS for batch 25937		Prep Basis: As Received
Batch ID: 25941	Method: EPA Method 1613B	
Run Date: 05/19/2014 16:15	Analyst: JTF	Instrument: HRP750
Data File: A19MAY14B-3		Dilution: 1
Prep Batch: 25937	Prep Method: SW846 3540C	
Prep Date: 16-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.6	pg/g	0.132	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.5	pg/g	0.304	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		93.6	pg/g	0.662	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	0.682	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		100	pg/g	0.712	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		94.5	pg/g	1.03	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		199	pg/g	2.46	10.0
51207-31-9	2,3,7,8-TCDF		18.6	pg/g	0.150	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.4	pg/g	0.436	5.00
57117-31-4	2,3,4,7,8-PeCDF		97.7	pg/g	0.434	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		101	pg/g	0.788	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.742	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		100	pg/g	0.808	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		104	pg/g	1.38	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		94.0	pg/g	0.860	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		97.8	pg/g	1.50	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		204	pg/g	2.32	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		152	200	pg/g	75.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		150	200	pg/g	75.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		138	200	pg/g	69.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		175	200	pg/g	87.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		138	200	pg/g	69.1	(22%-166%)
13C-OCDD		207	400	pg/g	51.7	(13%-199%)
13C-2,3,7,8-TCDF		159	200	pg/g	79.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		157	200	pg/g	78.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		155	200	pg/g	77.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		143	200	pg/g	71.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		168	200	pg/g	84.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		152	200	pg/g	75.8	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		130	200	pg/g	65.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		147	200	pg/g	73.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		127	200	pg/g	63.6	(20%-186%)
37Cl-2,3,7,8-TCDD		18.4	20.0	pg/g	92.2	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6123	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010435		Matrix: SOLID
Client Sample: QC for batch 25937		
Client ID: LCSD for batch 25937		Prep Basis: As Received
Batch ID: 25941	Method: EPA Method 1613B	
Run Date: 05/19/2014 17:02	Analyst: JTF	Instrument: HRP750
Data File: A19MAY14B-4		Dilution: 1
Prep Batch: 25937	Prep Method: SW846 3540C	
Prep Date: 16-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.4	pg/g	0.145	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.484	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		101	pg/g	0.662	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.7	pg/g	0.662	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		103	pg/g	0.700	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.9	pg/g	1.15	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		198	pg/g	2.38	10.0
51207-31-9	2,3,7,8-TCDF		18.2	pg/g	0.160	1.00
57117-41-6	1,2,3,7,8-PeCDF		98.9	pg/g	0.410	5.00
57117-31-4	2,3,4,7,8-PeCDF		98.6	pg/g	0.408	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		97.9	pg/g	0.876	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.860	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		99.0	pg/g	0.926	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		105	pg/g	1.49	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.8	pg/g	0.688	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.0	pg/g	1.30	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		213	pg/g	2.20	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		155	200	pg/g	77.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		153	200	pg/g	76.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		137	200	pg/g	68.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		179	200	pg/g	89.4	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		145	200	pg/g	72.4	(22%-166%)
13C-OCDD		230	400	pg/g	57.6	(13%-199%)
13C-2,3,7,8-TCDF		163	200	pg/g	81.6	(22%-152%)
13C-1,2,3,7,8-PeCDF		160	200	pg/g	80.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		159	200	pg/g	79.6	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		146	200	pg/g	73.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		162	200	pg/g	81.2	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		155	200	pg/g	77.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		133	200	pg/g	66.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		151	200	pg/g	75.3	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		131	200	pg/g	65.5	(20%-186%)
37Cl-2,3,7,8-TCDD		17.6	20.0	pg/g	88.2	(31%-191%)

Comments:

"

O c{ "45."4236"

"

O t0Fcxkf "Mlptqj "

Ugci wniGpxkqpo gpvniVgej pqmi lgu."lpeqtr qtcvgf ""

42'Lco gu"Vqy p'Hcto 'F tkxg""

Hqtkucpv."O kuqwk85256""

"

Tg<Utgengt "Hqtgu"Tgo qxcniCevkqp""

Y qtniQtf gt<8352""

"

F gct'O t0Mlptqj <

*****Ecr g'Hgct "Cpcn{ vlecnNNE"EHc +cr r tgecvgu"vj g'qr r qt wpls{ "q'r tqxkf g'vj g'gpenqugf "cpcn{ vlecnl guwuu"lqt"vj g'uco r rg"u+y g'tgegkxgf qp"O c{ "42."42360Vj ku'qtki lpcnlf cvc'tgr qt vj cu'dggp'r tgr ctgf "cpf 't gxlgy gf "lp"ceeqtf cpeg'y kj "EHc ai"ucpf ctg "qr gtcvpi 'r tqegf wgu0

*****Qw'r qnle{ "ku"q'r tqxkf g'j ki j 's wcnk{ .r gtuqpcrk gf "cpcn{ vlecnl ugt xlegu"q"gpcedng" { qw"q'o ggv" { qw"cpn{ vlecnl pggf u"qp"lko g'gxgt { "lko g0 Y g'tvuu"vj cv" { qw'y knl hkp" "gxgt { vj lpi "lp"qtf gt "bpf "q" { qw"ucvuhcecvkqp0Ki" { qw'j cxg"cp { 's vguwqpu."r rncug" f q"pqv'j gukscv"q"ecni'o g'cv ; 32/9; 7/26430"

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E { p j k c "Netnikpu

Rt qlgev"O epci gt

"

"

Rwtej cug"Qtf gt<32; 866""

Gpenquwgu"

Page: 1 of 2
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request
 CFA Work Order Number: 6130

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech, Inc Phone #: 314-517-6798

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Acton Fax #:

Address: 20 Jamestown Farm Drive Florissant, Mo 63034

Collected by: R Clayton Send Results To: davekinroth@charter.net

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers											Comments Note: extra sample is required for sample specific QC				
SFRA-42	05-16-14	0920			S	1	X														
SFRA-43		1125			S	1	X														
SFRA-44		1355			S	1	X														
SFRA-45		1706			S	1	X														
SFRA-46					S	1	X														
SFRA-47					S	1	X														
SFRA-48					S	1	X														
SFRA-49					S	1	X														
SFRA-50					S	1	X														
SFRA-51					S	1	X														

TAT Requested: Normal: Rush: Specify: F2 (Subject to Surcharge) Fax Results: Yes / No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time
<u>R Clayton</u>	<u>5-16-14</u>	<u>1110</u>

Sample Shipping and Delivery Details	
CFA PM: <u>Cynde Larkins</u>	
Method of Shipment: <u>Fed EX</u>	Date Shipped: <u>5-16-14</u> - <u>5-19-14</u>
Airbill #: <u>8042 3157 0881</u>	
Airbill #:	

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
 Custody Seal Intact?
 YES NO
 Cooler Temp:
3.8 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

KCI 874 qn69

Page: 2 of 2
Project #:
CFA Quote #:
COC Number ⁽¹⁾:
PO Number:

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

CFA Work Order Number: 6130

Cape Fear Analytical, LLC
3306 Kitty Hawk Rd. Suite 120
Wilmington, NC 28405
Phone: (910) 795-0421

Client Name: Tetra Tech Inc. Phone #: 314-517-6798

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Stacked Forest Removal Action Fax #:

<- Preservative Type (6)

Address: 20 Jamestown Farm Dr Florissant Mo 63054

Collected by: R Clayton Send Results To: davekinroth@cheater.net

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers													
SFRA-52	05-19-14	1045			S	1	X												
SFRA-53	05-19-14	1305			S	1	X												
SFRA-54	05-19-14	1540			S	1	X												
SFRA-55	05-19-14	1650			S	1	X												

Total number of containers											Comments	
163B												Note: extra sample is required for sample specific QC

TAT Requested: Normal: Rush: Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Sample Collection Time Zone
Eastern Pacific
Central Other _____
Mountain

Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time
<u>R Clayton</u>	<u>5-19-14</u>	<u>1700</u>

Sample Shipping and Delivery Details	
CFA PM: <u>Cynde Larkins</u>	
Method of Shipment:	Date Shipped:
Airbill #: <u>8042 3157 0881</u>	
Airbill #:	

- 1.) Chain of Custody Number = Client Determined
- 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- 3.) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact?
YES NO
Cooler Temp:
3.8 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6130
Shipping Company: FedEx	Date/Time Received: 20MAY14 1110

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			✓
Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other (describe)
2 Chain of Custody documents included with shipment?	✓			
3 Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other (describe) 3.8
4 Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	✓			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?			✓	Sample IDs, containers affected: See notes below
10 Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	✓			

Comments:

- Samples with no time on COC or labels: SFRA-46, 47, 48, 49, 50 & 51.
- Collection time on SFRA-52 label is 1258, COC has 1049.
- Collection date on SFRA-42 label is 5-15-14, COC has 05-16-14.

Checklist performed by: Initials: CY Date: 20MAY14

Subject: correct information for samples from Strecker Forest site
From: "rclaytor@seagullenvirotech.com" <rclaytor@seagullenvirotech.com>
Date: 5/21/2014 6:56 PM
To: cynde.larkins@cfanalytical.com

I have provided the information you requested, I am sorry for any inconvenience it might have caused.

CFA received your soil samples for the Strecker Forest project and
> there are a few discrepancies to bring to your attention.

>
> 1. Sample SFRA-42 has a collection date on the label of 5/15/14 while
> the COC has 05-16-14. Will you please verify the correct date? The correct date is
5/16/14

>
> 2. Sample SFRA-52 has a collection time on the label of 12:58 while The correct time is 1258
> the COC has 10:49. Will you please verify the correct time?

>
> 3. The following samples do not have collection times on the COC or
> the labels: SFRA-46, 47, 48, 49, 50 and 51. Please send the
> collection times.

> #46 @1819, #47 @ 1823, #48 @ 1826, #49 @ 1828, #50@ 1831,
and #51 @ 1835

> Let me know if there are any questions. The COC is attached for your
> review.

>
> Thank you,
>
--

Cynde Larkins
Project Manager Assistant
Cape Fear Analytical
3306 Kitty Hawk Road
Suite 120
Wilmington, NC 28405
(910) 795-0421
Rick Claytor, CHMM
Sr. Environmental Scientist
Seagull Environmental Technologies, Inc.
Woman-Owned, 8(a) Firm
email: rclaytor@seagullenvirotech.com

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6130**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25962
Clean Up Batch Number: 25961
Extraction Batch Number: 25960

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6130001	SFRA-42
6130002	SFRA-43
6130003	SFRA-44
6130004	SFRA-45
6130005	SFRA-46
6130006	SFRA-47
6130007	SFRA-48
6130008	SFRA-49
6130009	SFRA-50
6130010	SFRA-51
6130011	SFRA-52
6130012	SFRA-53
6130013	SFRA-54
6130014	SFRA-55
12010459	Method Blank (MB)
12010460	Laboratory Control Sample (LCS)
12010461	Laboratory Control Sample Duplicate (LCSD)
12010462	6130001(SFRA-42) Matrix Spike (MS)
12010463	6130001(SFRA-42) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6130001 (SFRA-42)- Batch 25962 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike/Duplicate (MS/MSD) Recovery Statement

The MS recoveries for this SDG were not within the acceptance limits. The failures confirm in the matrix spike duplicate and are attributed to matrix interference. 12010462 (SFRA-42) and 12010463 (SFRA-42)- Batch 25962.

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent differences (RPD) between each MS and MSD were not within the required acceptance limits. Sample data is validated based on acceptable LCS/LCSD results. 12010462 (SFRA-42) and 12010463 (SFRA-42)- Batch 25962.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 1g aliquot was used for extraction due to known high levels of target analytes from this site. Batch 25962.

Sample Dilutions

Samples 12010462 (SFRA-42), 12010463 (SFRA-42), 6130001 (SFRA-42), 6130002 (SFRA-43), 6130003 (SFRA-44), 6130004 (SFRA-45), 6130005 (SFRA-46), 6130006 (SFRA-47), 6130007 (SFRA-48), 6130010 (SFRA-51), 6130012 (SFRA-53), 6130013 (SFRA-54) and 6130014 (SFRA-55)- Batch 25962 were diluted due to the presence of overrange target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

The following NCR was generated for this SDG: 644524 12010463 (SFRA-42)- Batch 25962.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These

hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

VGVT223"Vgvtc"Vgej "GO "Kpeqtr qtcvgf
EnkpvUF I <8352"EHC"Y qtnlQtf gt<8352

The Qualifiers in this report are defined as follows:

, ""C"s wcrk{ "eqptqnlcpn{ vg'tgeqxt { "ku'qwukf g'qh'ur gekhgf "ceegr vcpqg'etkgtk
, , ""Cpcn{ vg'ku'c'lwttqi cvg'eqo r qwpf
L""Xcwg"ku'gukl cvgf
W""Cpcn{ vg'y cu'cpcn{ | gf 'hqt."dw'pqvf ggevgf "cdqxg"vj g'ur gekhgf "f ggevkqp'iko k0

Review/Validation

Ecr g'Hgct"Cpcn{ vcrn'tgs wktgu'cm'cpcn{ vcrn'f cvc"vq'dg'xgtkhgf "d{ "c"s wcrk{ "f cvc'tgxky gt0
Vj g'hqmqy lpi "f cvc'xcrn' cvqt'xgtkhgf "vj g'lphqto cvkqp'r tguqpvf "lp'vj ku'ecug'pcttcvkxg<

Signature:



Name: Heather Patterson

Date: 23 MAY 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130001	Date Collected: 05/16/2014 09:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 19.4
Client ID: SFRA-42		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 12:13	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-2		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.33 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		6160	pg/g	14.9	93.3
40321-76-4	1,2,3,7,8-PeCDD	U	13.3	pg/g	13.3	466
39227-28-6	1,2,3,4,7,8-HxCDD	U	24.2	pg/g	24.2	466
57653-85-7	1,2,3,6,7,8-HxCDD	J	40.5	pg/g	25.9	466
19408-74-3	1,2,3,7,8,9-HxCDD	U	26.7	pg/g	26.7	466
35822-46-9	1,2,3,4,6,7,8-HpCDD		766	pg/g	33.9	466
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13900	pg/g	141	933
51207-31-9	2,3,7,8-TCDF	J	33.6	pg/g	16.6	93.3
57117-41-6	1,2,3,7,8-PeCDF	U	12.7	pg/g	12.7	466
57117-31-4	2,3,4,7,8-PeCDF	U	13.2	pg/g	13.2	466
70648-26-9	1,2,3,4,7,8-HxCDF	J	20.9	pg/g	9.94	466
57117-44-9	1,2,3,6,7,8-HxCDF	U	9.64	pg/g	9.64	466
60851-34-5	2,3,4,6,7,8-HxCDF	J	14.6	pg/g	10.3	466
72918-21-9	1,2,3,7,8,9-HxCDF	U	20.1	pg/g	20.1	466
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	140	pg/g	10.9	466
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	19.2	pg/g	19.2	466
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	226	pg/g	46.4	933

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1440	1870	pg/g	77.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		1460	1870	pg/g	78.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1650	1870	pg/g	88.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1820	1870	pg/g	97.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1620	1870	pg/g	86.8	(23%-140%)
13C-OCDD		3050	3730	pg/g	81.7	(17%-157%)
13C-2,3,7,8-TCDF		1600	1870	pg/g	85.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1460	1870	pg/g	78.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1500	1870	pg/g	80.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1680	1870	pg/g	89.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1820	1870	pg/g	97.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1750	1870	pg/g	93.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1370	1870	pg/g	73.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1720	1870	pg/g	92.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1460	1870	pg/g	78.5	(26%-138%)
37Cl-2,3,7,8-TCDD		197	187	pg/g	106	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130002	Date Collected: 05/16/2014 11:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 21.6
Client ID: SFRA-43		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 14:36	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-5		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20700	pg/g	23.3	111
40321-76-4	1,2,3,7,8-PeCDD	U	20.5	pg/g	20.5	554
39227-28-6	1,2,3,4,7,8-HxCDD	J	31.6	pg/g	25.3	554
57653-85-7	1,2,3,6,7,8-HxCDD	J	57.2	pg/g	25.1	554
19408-74-3	1,2,3,7,8,9-HxCDD	U	29.7	pg/g	29.7	554
35822-46-9	1,2,3,4,6,7,8-HpCDD		952	pg/g	49.0	554
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13400	pg/g	203	1110
51207-31-9	2,3,7,8-TCDF	J	94.0	pg/g	29.5	111
57117-41-6	1,2,3,7,8-PeCDF	U	17	pg/g	17.0	554
57117-31-4	2,3,4,7,8-PeCDF	U	16.3	pg/g	16.3	554
70648-26-9	1,2,3,4,7,8-HxCDF	J	29.1	pg/g	21.6	554
57117-44-9	1,2,3,6,7,8-HxCDF	U	21.8	pg/g	21.8	554
60851-34-5	2,3,4,6,7,8-HxCDF	U	21.5	pg/g	21.5	554
72918-21-9	1,2,3,7,8,9-HxCDF	U	36.8	pg/g	36.8	554
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	244	pg/g	17.6	554
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	36.6	pg/g	36.6	554
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	301	pg/g	70.5	1110

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1830	2220	pg/g	82.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1870	2220	pg/g	84.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1760	2220	pg/g	79.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2040	2220	pg/g	92.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1850	2220	pg/g	83.3	(23%-140%)
13C-OCDD		3220	4430	pg/g	72.6	(17%-157%)
13C-2,3,7,8-TCDF		2020	2220	pg/g	91.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	2220	pg/g	86.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1970	2220	pg/g	88.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1800	2220	pg/g	81.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1890	2220	pg/g	85.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1920	2220	pg/g	86.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1470	2220	pg/g	66.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1920	2220	pg/g	86.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1610	2220	pg/g	72.8	(26%-138%)
37Cl-2,3,7,8-TCDD		276	222	pg/g	124	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130003	Date Collected: 05/16/2014 13:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 22
Client ID: SFRA-44		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 15:24	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-6		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		14000	pg/g	8.87	122
40321-76-4	1,2,3,7,8-PeCDD	U	13.2	pg/g	13.2	611
39227-28-6	1,2,3,4,7,8-HxCDD	J	31.2	pg/g	24.9	611
57653-85-7	1,2,3,6,7,8-HxCDD	J	233	pg/g	25.4	611
19408-74-3	1,2,3,7,8,9-HxCDD	J	72.1	pg/g	26.6	611
35822-46-9	1,2,3,4,6,7,8-HpCDD		2160	pg/g	36.4	611
3268-87-9	1,2,3,4,6,7,8,9-OCDD		15500	pg/g	103	1220
51207-31-9	2,3,7,8-TCDF	J	86.4	pg/g	16.1	122
57117-41-6	1,2,3,7,8-PeCDF	U	9.89	pg/g	9.89	611
57117-31-4	2,3,4,7,8-PeCDF	J	12.0	pg/g	9.31	611
70648-26-9	1,2,3,4,7,8-HxCDF	J	53.2	pg/g	15.2	611
57117-44-9	1,2,3,6,7,8-HxCDF	U	22.6	pg/g	22.6	611
60851-34-5	2,3,4,6,7,8-HxCDF	J	37.4	pg/g	14.8	611
72918-21-9	1,2,3,7,8,9-HxCDF	U	26.4	pg/g	26.4	611
67562-39-4	1,2,3,4,6,7,8-HpCDF		736	pg/g	14.1	611
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	38.3	pg/g	38.3	611
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	661	pg/g	64.7	1220

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2070	2440	pg/g	84.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		2040	2440	pg/g	83.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1780	2440	pg/g	73.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2220	2440	pg/g	91.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2050	2440	pg/g	84.0	(23%-140%)
13C-OCDD		3900	4890	pg/g	79.8	(17%-157%)
13C-2,3,7,8-TCDF		2210	2440	pg/g	90.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		2130	2440	pg/g	87.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		2160	2440	pg/g	88.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1870	2440	pg/g	76.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2100	2440	pg/g	86.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2040	2440	pg/g	83.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1680	2440	pg/g	68.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2080	2440	pg/g	84.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1820	2440	pg/g	74.3	(26%-138%)
37Cl-2,3,7,8-TCDD		311	244	pg/g	127	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130004	Date Collected: 05/16/2014 17:06	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 20.4
Client ID: SFRA-45		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 16:19	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-7		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		10600	pg/g	17.9	108
40321-76-4	1,2,3,7,8-PeCDD	U	15.3	pg/g	15.3	541
39227-28-6	1,2,3,4,7,8-HxCDD	U	28.4	pg/g	28.4	541
57653-85-7	1,2,3,6,7,8-HxCDD	J	40.2	pg/g	28.4	541
19408-74-3	1,2,3,7,8,9-HxCDD	U	30.1	pg/g	30.1	541
35822-46-9	1,2,3,4,6,7,8-HpCDD		605	pg/g	36.8	541
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11800	pg/g	141	1080
51207-31-9	2,3,7,8-TCDF	J	56.6	pg/g	25.1	108
57117-41-6	1,2,3,7,8-PeCDF	U	12.6	pg/g	12.6	541
57117-31-4	2,3,4,7,8-PeCDF	U	11.8	pg/g	11.8	541
70648-26-9	1,2,3,4,7,8-HxCDF	U	16.6	pg/g	16.6	541
57117-44-9	1,2,3,6,7,8-HxCDF	U	16.6	pg/g	16.6	541
60851-34-5	2,3,4,6,7,8-HxCDF	U	17.4	pg/g	17.4	541
72918-21-9	1,2,3,7,8,9-HxCDF	U	32.5	pg/g	32.5	541
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	158	pg/g	21.1	541
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	37.9	pg/g	37.9	541
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	209	pg/g	55.9	1080

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1690	2170	pg/g	77.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1750	2170	pg/g	81.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1640	2170	pg/g	75.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2040	2170	pg/g	94.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1900	2170	pg/g	87.6	(23%-140%)
13C-OCDD		3240	4330	pg/g	74.7	(17%-157%)
13C-2,3,7,8-TCDF		1850	2170	pg/g	85.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1820	2170	pg/g	84.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1840	2170	pg/g	85.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1660	2170	pg/g	76.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1910	2170	pg/g	88.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1850	2170	pg/g	85.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1500	2170	pg/g	69.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1840	2170	pg/g	85.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1600	2170	pg/g	74.1	(26%-138%)
37Cl-2,3,7,8-TCDD		252	217	pg/g	116	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130005	Date Collected: 05/16/2014 18:19	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 28.1
Client ID: SFRA-46		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 17:06	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-8		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		30700	pg/g	20.1	138
40321-76-4	1,2,3,7,8-PeCDD	U	17.2	pg/g	17.2	688
39227-28-6	1,2,3,4,7,8-HxCDD	U	77.3	pg/g	77.3	688
57653-85-7	1,2,3,6,7,8-HxCDD	J	100	pg/g	72.4	688
19408-74-3	1,2,3,7,8,9-HxCDD	U	79	pg/g	79.0	688
35822-46-9	1,2,3,4,6,7,8-HpCDD		1060	pg/g	53.7	688
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13000	pg/g	162	1380
51207-31-9	2,3,7,8-TCDF	J	137	pg/g	23.2	138
57117-41-6	1,2,3,7,8-PeCDF	U	13.3	pg/g	13.3	688
57117-31-4	2,3,4,7,8-PeCDF	U	13.2	pg/g	13.2	688
70648-26-9	1,2,3,4,7,8-HxCDF	J	30.4	pg/g	18.0	688
57117-44-9	1,2,3,6,7,8-HxCDF	U	17.6	pg/g	17.6	688
60851-34-5	2,3,4,6,7,8-HxCDF	U	22	pg/g	22.0	688
72918-21-9	1,2,3,7,8,9-HxCDF	U	28.1	pg/g	28.1	688
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	426	pg/g	14.1	688
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	26	pg/g	26.0	688
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	559	pg/g	61.4	1380

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2190	2750	pg/g	79.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		2130	2750	pg/g	77.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2040	2750	pg/g	74.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2340	2750	pg/g	84.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2320	2750	pg/g	84.3	(23%-140%)
13C-OCDD		4010	5500	pg/g	72.8	(17%-157%)
13C-2,3,7,8-TCDF		2390	2750	pg/g	87.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		2160	2750	pg/g	78.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2250	2750	pg/g	81.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2080	2750	pg/g	75.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2300	2750	pg/g	83.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2250	2750	pg/g	81.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1830	2750	pg/g	66.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2390	2750	pg/g	86.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2000	2750	pg/g	72.5	(26%-138%)
37Cl-2,3,7,8-TCDD		354	275	pg/g	129	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130006	Date Collected: 05/16/2014 18:23	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 22
Client ID: SFRA-47		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 09:33	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_6-10		Dilution: 2
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4310	pg/g	4.35	21.5
40321-76-4	1,2,3,7,8-PeCDD	U	2.89	pg/g	2.89	108
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.93	pg/g	5.93	108
57653-85-7	1,2,3,6,7,8-HxCDD	U	6.06	pg/g	6.06	108
19408-74-3	1,2,3,7,8,9-HxCDD	U	6.36	pg/g	6.36	108
35822-46-9	1,2,3,4,6,7,8-HpCDD		153	pg/g	7.56	108
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7910	pg/g	27.2	215
51207-31-9	2,3,7,8-TCDF	J	19.7	pg/g	4.70	21.5
57117-41-6	1,2,3,7,8-PeCDF	U	1.77	pg/g	1.77	108
57117-31-4	2,3,4,7,8-PeCDF	U	1.69	pg/g	1.69	108
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.31	pg/g	2.31	108
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.18	pg/g	2.18	108
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.35	pg/g	2.35	108
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.81	pg/g	3.81	108
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	16.9	pg/g	1.85	108
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3.08	pg/g	3.08	108
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	28.9	pg/g	6.87	215

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1790	2150	pg/g	82.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1890	2150	pg/g	87.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1690	2150	pg/g	78.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1850	2150	pg/g	86.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1920	2150	pg/g	88.9	(23%-140%)
13C-OCDD		3850	4310	pg/g	89.4	(17%-157%)
13C-2,3,7,8-TCDF		1920	2150	pg/g	89.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1930	2150	pg/g	89.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1910	2150	pg/g	88.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1710	2150	pg/g	79.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1800	2150	pg/g	83.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1830	2150	pg/g	85.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1550	2150	pg/g	71.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1850	2150	pg/g	85.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1810	2150	pg/g	84.1	(26%-138%)
37Cl-2,3,7,8-TCDD		224	215	pg/g	104	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130007	Date Collected: 05/16/2014 18:26	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 19.5
Client ID: SFRA-48		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 17:54	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-9		Dilution: 5
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		7320	pg/g	10.5	55.0
40321-76-4	1,2,3,7,8-PeCDD	U	8.22	pg/g	8.22	275
39227-28-6	1,2,3,4,7,8-HxCDD	U	16.2	pg/g	16.2	275
57653-85-7	1,2,3,6,7,8-HxCDD	U	27.3	pg/g	27.3	275
19408-74-3	1,2,3,7,8,9-HxCDD	U	16.2	pg/g	16.2	275
35822-46-9	1,2,3,4,6,7,8-HpCDD		408	pg/g	35.6	275
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9930	pg/g	100	550
51207-31-9	2,3,7,8-TCDF	J	51.6	pg/g	13.4	55.0
57117-41-6	1,2,3,7,8-PeCDF	U	5.83	pg/g	5.83	275
57117-31-4	2,3,4,7,8-PeCDF	U	5.85	pg/g	5.85	275
70648-26-9	1,2,3,4,7,8-HxCDF	U	10.8	pg/g	10.8	275
57117-44-9	1,2,3,6,7,8-HxCDF	U	10.5	pg/g	10.5	275
60851-34-5	2,3,4,6,7,8-HxCDF	U	11	pg/g	11.0	275
72918-21-9	1,2,3,7,8,9-HxCDF	U	20.2	pg/g	20.2	275
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	101	pg/g	7.45	275
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	15.3	pg/g	15.3	275
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	101	pg/g	24.6	550

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1860	2200	pg/g	84.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1840	2200	pg/g	83.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1760	2200	pg/g	80.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2090	2200	pg/g	94.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1900	2200	pg/g	86.6	(23%-140%)
13C-OCDD		3500	4400	pg/g	79.6	(17%-157%)
13C-2,3,7,8-TCDF		1930	2200	pg/g	87.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1980	2200	pg/g	89.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1920	2200	pg/g	87.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1800	2200	pg/g	81.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1980	2200	pg/g	90.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1980	2200	pg/g	89.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1600	2200	pg/g	72.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2000	2200	pg/g	90.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1730	2200	pg/g	78.5	(26%-138%)
37Cl-2,3,7,8-TCDD		228	220	pg/g	104	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130008	Date Collected: 05/16/2014 18:28	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 20.9
Client ID: SFRA-49		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 08:43	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_6-9		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.29 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1410	pg/g	1.22	9.80
40321-76-4	1,2,3,7,8-PeCDD	U	1.78	pg/g	1.78	49.0
39227-28-6	1,2,3,4,7,8-HxCDD	J	7.61	pg/g	3.00	49.0
57653-85-7	1,2,3,6,7,8-HxCDD	J	11.5	pg/g	3.12	49.0
19408-74-3	1,2,3,7,8,9-HxCDD	J	5.39	pg/g	3.25	49.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		270	pg/g	5.27	49.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8070	pg/g	14.3	98.0
51207-31-9	2,3,7,8-TCDF	J	8.80	pg/g	2.12	9.80
57117-41-6	1,2,3,7,8-PeCDF	U	2.22	pg/g	2.22	49.0
57117-31-4	2,3,4,7,8-PeCDF	U	2.02	pg/g	2.02	49.0
70648-26-9	1,2,3,4,7,8-HxCDF	J	5.00	pg/g	1.47	49.0
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.84	pg/g	1.51	49.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.41	pg/g	2.41	49.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.31	pg/g	2.31	49.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	43.1	pg/g	1.46	49.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.41	pg/g	2.45	49.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	75.9	pg/g	3.69	98.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1570	1960	pg/g	80.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1710	1960	pg/g	87.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1470	1960	pg/g	75.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1640	1960	pg/g	83.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1700	1960	pg/g	86.8	(23%-140%)
13C-OCDD		3530	3920	pg/g	90.0	(17%-157%)
13C-2,3,7,8-TCDF		1680	1960	pg/g	85.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1660	1960	pg/g	84.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1670	1960	pg/g	85.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1460	1960	pg/g	74.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1530	1960	pg/g	78.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1560	1960	pg/g	79.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1380	1960	pg/g	70.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1650	1960	pg/g	84.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1610	1960	pg/g	81.9	(26%-138%)
37Cl-2,3,7,8-TCDD		199	196	pg/g	101	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130009	Date Collected: 05/16/2014 18:31	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 22
Client ID: SFRA-50		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 03:11	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_6-2		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.27 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2650	pg/g	1.69	10.1
40321-76-4	1,2,3,7,8-PeCDD	U	3.51	pg/g	3.51	50.4
39227-28-6	1,2,3,4,7,8-HxCDD	J	17.8	pg/g	3.41	50.4
57653-85-7	1,2,3,6,7,8-HxCDD		57.7	pg/g	3.47	50.4
19408-74-3	1,2,3,7,8,9-HxCDD	J	17.9	pg/g	3.65	50.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		642	pg/g	5.81	50.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12100	pg/g	15.9	101
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	2.50	10.1
57117-41-6	1,2,3,7,8-PeCDF	J	14.9	pg/g	2.42	50.4
57117-31-4	2,3,4,7,8-PeCDF	J	3.21	pg/g	2.36	50.4
70648-26-9	1,2,3,4,7,8-HxCDF	J	13.1	pg/g	1.85	50.4
57117-44-9	1,2,3,6,7,8-HxCDF	J	5.45	pg/g	1.83	50.4
60851-34-5	2,3,4,6,7,8-HxCDF	J	7.39	pg/g	1.76	50.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.93	pg/g	2.93	50.4
67562-39-4	1,2,3,4,6,7,8-HpCDF		106	pg/g	1.80	50.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	9.14	pg/g	3.05	50.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		190	pg/g	2.24	101

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1660	2020	pg/g	82.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1740	2020	pg/g	86.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1610	2020	pg/g	79.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1750	2020	pg/g	86.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1910	2020	pg/g	94.9	(23%-140%)
13C-OCDD		3980	4040	pg/g	98.6	(17%-157%)
13C-2,3,7,8-TCDF		1800	2020	pg/g	89.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1810	2020	pg/g	89.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1780	2020	pg/g	88.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1640	2020	pg/g	81.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1710	2020	pg/g	84.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1740	2020	pg/g	86.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1530	2020	pg/g	75.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1820	2020	pg/g	90.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1740	2020	pg/g	86.2	(26%-138%)
37Cl-2,3,7,8-TCDD		212	202	pg/g	105	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130009	Date Collected: 05/16/2014 18:31	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 22
Client ID: SFRA-50		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 11:11	Analyst: JTF	Instrument: HRP763
Data File: b22may14a-4		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.27 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		19.1	pg/g	2.36	10.1

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

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Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130010	Date Collected: 05/16/2014 18:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 18.6
Client ID: SFRA-51		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 18:42	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-10		Dilution: 5
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4380	pg/g	9.02	53.0
40321-76-4	1,2,3,7,8-PeCDD	U	7.73	pg/g	7.73	265
39227-28-6	1,2,3,4,7,8-HxCDD	J	15.6	pg/g	12.4	265
57653-85-7	1,2,3,6,7,8-HxCDD	J	29.3	pg/g	12.6	265
19408-74-3	1,2,3,7,8,9-HxCDD	U	13.2	pg/g	13.2	265
35822-46-9	1,2,3,4,6,7,8-HpCDD		533	pg/g	19.0	265
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12500	pg/g	92.6	530
51207-31-9	2,3,7,8-TCDF	J	26.2	pg/g	10.5	53.0
57117-41-6	1,2,3,7,8-PeCDF	U	9.77	pg/g	9.77	265
57117-31-4	2,3,4,7,8-PeCDF	U	9.51	pg/g	9.51	265
70648-26-9	1,2,3,4,7,8-HxCDF	U	13.2	pg/g	13.2	265
57117-44-9	1,2,3,6,7,8-HxCDF	U	7.71	pg/g	7.71	265
60851-34-5	2,3,4,6,7,8-HxCDF	U	8.01	pg/g	8.01	265
72918-21-9	1,2,3,7,8,9-HxCDF	U	14	pg/g	14.0	265
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	96.7	pg/g	5.72	265
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	11.5	pg/g	11.5	265
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	136	pg/g	33.3	530

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1660	2120	pg/g	78.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1680	2120	pg/g	79.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1510	2120	pg/g	71.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1950	2120	pg/g	92.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1710	2120	pg/g	80.8	(23%-140%)
13C-OCDD		3290	4240	pg/g	77.8	(17%-157%)
13C-2,3,7,8-TCDF		1840	2120	pg/g	86.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1730	2120	pg/g	81.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1750	2120	pg/g	82.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1590	2120	pg/g	75.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1790	2120	pg/g	84.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1780	2120	pg/g	84.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1380	2120	pg/g	65.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1740	2120	pg/g	82.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1560	2120	pg/g	73.7	(26%-138%)
37Cl-2,3,7,8-TCDD		211	212	pg/g	99.5	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130011	Date Collected: 05/19/2014 12:58	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 21.6
Client ID: SFRA-52		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 04:46	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_6-4		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.06 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2400	pg/g	1.37	12.0
40321-76-4	1,2,3,7,8-PeCDD	J	2.31	pg/g	1.78	60.1
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.20	pg/g	2.79	60.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	13.0	pg/g	2.89	60.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	6.06	pg/g	3.01	60.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		262	pg/g	5.08	60.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7840	pg/g	13.9	120
51207-31-9	2,3,7,8-TCDF		13.3	pg/g	2.77	12.0
57117-41-6	1,2,3,7,8-PeCDF	U	1.39	pg/g	1.39	60.1
57117-31-4	2,3,4,7,8-PeCDF	J	2.53	pg/g	1.37	60.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	2.91	pg/g	1.37	60.1
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.90	pg/g	1.37	60.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.91	pg/g	1.40	60.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.04	pg/g	2.04	60.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	45.0	pg/g	1.37	60.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.89	pg/g	2.89	60.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	120	pg/g	3.54	120

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2070	2410	pg/g	86.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		2150	2410	pg/g	89.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1920	2410	pg/g	79.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2070	2410	pg/g	86.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2320	2410	pg/g	96.6	(23%-140%)
13C-OCDD		4690	4810	pg/g	97.5	(17%-157%)
13C-2,3,7,8-TCDF		2190	2410	pg/g	91.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		2190	2410	pg/g	91.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		2160	2410	pg/g	89.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1920	2410	pg/g	79.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2020	2410	pg/g	83.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2040	2410	pg/g	84.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1860	2410	pg/g	77.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2190	2410	pg/g	91.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2150	2410	pg/g	89.3	(26%-138%)
37Cl-2,3,7,8-TCDD		255	241	pg/g	106	(35%-197%)

Comments:

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130011	Date Collected: 05/19/2014 12:58	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 21.6
Client ID: SFRA-52		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 11:30	Analyst: JTF	Instrument: HRP763
Data File: b22may14a-5		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.06 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		13.9	pg/g	3.39	12.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130012	Date Collected: 05/19/2014 13:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 22.8
Client ID: SFRA-53		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 19:30	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-11		Dilution: 20
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		42600	pg/g	37.0	247
40321-76-4	1,2,3,7,8-PeCDD	U	26.9	pg/g	26.9	1230
39227-28-6	1,2,3,4,7,8-HxCDD	U	48.4	pg/g	48.4	1230
57653-85-7	1,2,3,6,7,8-HxCDD	U	45.4	pg/g	45.4	1230
19408-74-3	1,2,3,7,8,9-HxCDD	U	49.4	pg/g	49.4	1230
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	904	pg/g	102	1230
3268-87-9	1,2,3,4,6,7,8,9-OCDD		15700	pg/g	291	2470
51207-31-9	2,3,7,8-TCDF	J	186	pg/g	33.3	247
57117-41-6	1,2,3,7,8-PeCDF	U	19.4	pg/g	19.4	1230
57117-31-4	2,3,4,7,8-PeCDF	U	19.2	pg/g	19.2	1230
70648-26-9	1,2,3,4,7,8-HxCDF	U	22	pg/g	22.0	1230
57117-44-9	1,2,3,6,7,8-HxCDF	U	21.5	pg/g	21.5	1230
60851-34-5	2,3,4,6,7,8-HxCDF	U	24.2	pg/g	24.2	1230
72918-21-9	1,2,3,7,8,9-HxCDF	U	42	pg/g	42.0	1230
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	156	pg/g	24.9	1230
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	41	pg/g	41.0	1230
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	581	pg/g	110	2470

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1690	2470	pg/g	68.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1750	2470	pg/g	70.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1610	2470	pg/g	65.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2000	2470	pg/g	81.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1760	2470	pg/g	71.4	(23%-140%)
13C-OCDD		3020	4940	pg/g	61.1	(17%-157%)
13C-2,3,7,8-TCDF		1890	2470	pg/g	76.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1780	2470	pg/g	72.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1780	2470	pg/g	72.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1690	2470	pg/g	68.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2470	pg/g	77.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1820	2470	pg/g	73.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1410	2470	pg/g	57.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1770	2470	pg/g	71.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1640	2470	pg/g	66.3	(26%-138%)
37Cl-2,3,7,8-TCDD		342	247	pg/g	139	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130013	Date Collected: 05/19/2014 15:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 23.9
Client ID: SFRA-54		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 20:17	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-12		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19700	pg/g	17.0	113
40321-76-4	1,2,3,7,8-PeCDD	U	8.16	pg/g	8.16	567
39227-28-6	1,2,3,4,7,8-HxCDD	U	21.1	pg/g	21.1	567
57653-85-7	1,2,3,6,7,8-HxCDD	J	23.3	pg/g	19.8	567
19408-74-3	1,2,3,7,8,9-HxCDD	U	21.5	pg/g	21.5	567
35822-46-9	1,2,3,4,6,7,8-HpCDD		848	pg/g	56.9	567
3268-87-9	1,2,3,4,6,7,8,9-OCDD		23700	pg/g	148	1130
51207-31-9	2,3,7,8-TCDF	J	81.4	pg/g	12.4	113
57117-41-6	1,2,3,7,8-PeCDF	U	5.12	pg/g	5.12	567
57117-31-4	2,3,4,7,8-PeCDF	U	4.87	pg/g	4.87	567
70648-26-9	1,2,3,4,7,8-HxCDF	U	6.1	pg/g	6.10	567
57117-44-9	1,2,3,6,7,8-HxCDF	U	6.55	pg/g	6.55	567
60851-34-5	2,3,4,6,7,8-HxCDF	U	6.48	pg/g	6.48	567
72918-21-9	1,2,3,7,8,9-HxCDF	U	11.1	pg/g	11.1	567
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	140	pg/g	11.7	567
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	21.6	pg/g	21.6	567
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	622	pg/g	56.4	1130

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1880	2270	pg/g	83.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1900	2270	pg/g	83.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1810	2270	pg/g	79.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2250	2270	pg/g	99.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2010	2270	pg/g	88.7	(23%-140%)
13C-OCDD		3980	4530	pg/g	87.7	(17%-157%)
13C-2,3,7,8-TCDF		2020	2270	pg/g	89.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1940	2270	pg/g	85.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		2040	2270	pg/g	89.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1970	2270	pg/g	86.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2150	2270	pg/g	94.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2060	2270	pg/g	90.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1680	2270	pg/g	73.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2080	2270	pg/g	91.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1920	2270	pg/g	84.6	(26%-138%)
37Cl-2,3,7,8-TCDD		300	227	pg/g	132	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 6130014	Date Collected: 05/19/2014 16:50	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 05/20/2014 11:10	%Moisture: 22.7
Client ID: SFRA-55		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 21:05	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-13		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.25 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		13800	pg/g	19.0	103
40321-76-4	1,2,3,7,8-PeCDD	U	16.6	pg/g	16.6	517
39227-28-6	1,2,3,4,7,8-HxCDD	J	36.7	pg/g	34.8	517
57653-85-7	1,2,3,6,7,8-HxCDD	J	150	pg/g	32.5	517
19408-74-3	1,2,3,7,8,9-HxCDD	J	54.8	pg/g	35.4	517
35822-46-9	1,2,3,4,6,7,8-HpCDD		1430	pg/g	66.0	517
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14000	pg/g	185	1030
51207-31-9	2,3,7,8-TCDF	J	78.6	pg/g	35.6	103
57117-41-6	1,2,3,7,8-PeCDF	U	16.1	pg/g	16.1	517
57117-31-4	2,3,4,7,8-PeCDF	U	16	pg/g	16.0	517
70648-26-9	1,2,3,4,7,8-HxCDF	U	33.2	pg/g	33.2	517
57117-44-9	1,2,3,6,7,8-HxCDF	J	19.3	pg/g	19.2	517
60851-34-5	2,3,4,6,7,8-HxCDF	U	22.1	pg/g	22.1	517
72918-21-9	1,2,3,7,8,9-HxCDF	U	37.5	pg/g	37.5	517
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	453	pg/g	21.5	517
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	38.7	pg/g	38.7	517
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	423	pg/g	79.1	1030

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1620	2070	pg/g	78.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1730	2070	pg/g	83.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1480	2070	pg/g	71.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1910	2070	pg/g	92.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1730	2070	pg/g	83.8	(23%-140%)
13C-OCDD		3190	4140	pg/g	77.0	(17%-157%)
13C-2,3,7,8-TCDF		1840	2070	pg/g	89.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1730	2070	pg/g	83.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1770	2070	pg/g	85.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1540	2070	pg/g	74.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1870	2070	pg/g	90.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1760	2070	pg/g	85.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1380	2070	pg/g	66.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1630	2070	pg/g	79.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1400	2070	pg/g	67.7	(26%-138%)
37Cl-2,3,7,8-TCDD		216	207	pg/g	104	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6130

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010460	LCS for batch 25960	13C-2,3,7,8-TCDD		77.0	(20%-175%)
		13C-1,2,3,7,8-PeCDD		82.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		81.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		84.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		87.9	(22%-166%)
		13C-OCDD		81.4	(13%-199%)
		13C-2,3,7,8-TCDF		85.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		83.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		81.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		83.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		84.2	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		71.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		83.0	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		77.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		94.0	(31%-191%)
12010461	LCSD for batch 25960	13C-2,3,7,8-TCDD		84.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		92.6	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		85.1	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		87.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		95.6	(22%-166%)
		13C-OCDD		93.5	(13%-199%)
		13C-2,3,7,8-TCDF		92.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		90.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		90.8	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		83.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		83.3	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		85.1	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		75.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		89.5	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		88.8	(20%-186%)
		37Cl-2,3,7,8-TCDD		97.8	(31%-191%)
12010459	MB for batch 25960	13C-2,3,7,8-TCDD		82.8	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		87.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		90.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		96.9	(23%-140%)
		13C-OCDD		92.5	(17%-157%)
		13C-2,3,7,8-TCDF		89.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		86.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		89.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		76.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		92.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		87.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		99.3	(35%-197%)
6130009	SFRA-50	13C-2,3,7,8-TCDD		82.5	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6130

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6130009	SFRA-50	13C-1,2,3,7,8-PeCDD		86.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.9	(23%-140%)
		13C-OCDD		98.6	(17%-157%)
		13C-2,3,7,8-TCDF		89.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		84.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		75.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		86.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		105	(35%-197%)
6130011	SFRA-52	13C-2,3,7,8-TCDD		86.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		96.6	(23%-140%)
		13C-OCDD		97.5	(17%-157%)
		13C-2,3,7,8-TCDF		91.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		91.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		77.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.3	(26%-138%)
37Cl-2,3,7,8-TCDD		106	(35%-197%)		
6130008	SFRA-49	13C-2,3,7,8-TCDD		80.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		75.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.8	(23%-140%)
		13C-OCDD		90.0	(17%-157%)
		13C-2,3,7,8-TCDF		85.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.9	(26%-138%)
37Cl-2,3,7,8-TCDD		101	(35%-197%)		
6130006	SFRA-47	13C-2,3,7,8-TCDD		82.8	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		87.8	D (25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6130

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6130006	SFRA-47	13C-1,2,3,4,7,8-HxCDD		78.6 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.0 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.9 D	(23%-140%)
		13C-OCDD		89.4 D	(17%-157%)
		13C-2,3,7,8-TCDF		89.2 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.5 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.8 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.3 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.7 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.0 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		71.8 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.9 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		84.1 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		104 D	(35%-197%)
		6130001	SFRA-42	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				78.1 D	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				88.3 D	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				97.6 D	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				86.8 D	(23%-140%)
13C-OCDD				81.7 D	(17%-157%)
13C-2,3,7,8-TCDF				85.8 D	(24%-169%)
13C-1,2,3,7,8-PeCDF				78.5 D	(24%-185%)
13C-2,3,4,7,8-PeCDF				80.3 D	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				89.9 D	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				97.7 D	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				93.7 D	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				73.5 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				92.5 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				78.5 D	(26%-138%)
37Cl-2,3,7,8-TCDD		106 D	(35%-197%)		
12010462	SFRA-42(6130001MS)	13C-2,3,7,8-TCDD		83.6 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		85.8 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.1 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		97.0 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.1 D	(23%-140%)
		13C-OCDD		82.0 D	(17%-157%)
		13C-2,3,7,8-TCDF		91.5 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.0 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		90.7 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		83.9 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.2 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.6 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		76.9 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.8 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.7 D	(26%-138%)
37Cl-2,3,7,8-TCDD		103 D	(35%-197%)		
12010463	SFRA-42(6130001MSD)	13C-2,3,7,8-TCDD		80.5 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		84.5 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.5 D	(32%-141%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6130

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010463	SFRA-42(6130001MSD)	13C-1,2,3,6,7,8-HxCDD		91.5 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.9 D	(23%-140%)
		13C-OCDD		76.0 D	(17%-157%)
		13C-2,3,7,8-TCDF		90.3 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.9 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.4 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.7 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		82.3 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.3 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.7 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.9 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.9 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		104 D	(35%-197%)
6130002	SFRA-43	13C-2,3,7,8-TCDD		82.7 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		84.4 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.3 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		92.1 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.3 D	(23%-140%)
		13C-OCDD		72.6 D	(17%-157%)
		13C-2,3,7,8-TCDF		91.0 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.1 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.7 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.4 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		85.1 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.4 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.4 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		86.5 D	(28%-143%)		
13C-1,2,3,4,7,8,9-HpCDF		72.8 D	(26%-138%)		
37Cl-2,3,7,8-TCDD		124 D	(35%-197%)		
6130003	SFRA-44	13C-2,3,7,8-TCDD		84.7 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.6 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.0 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		91.0 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.0 D	(23%-140%)
		13C-OCDD		79.8 D	(17%-157%)
		13C-2,3,7,8-TCDF		90.3 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.3 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.3 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.6 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		86.0 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.4 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		68.6 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		84.9 D	(28%-143%)		
13C-1,2,3,4,7,8,9-HpCDF		74.3 D	(26%-138%)		
37Cl-2,3,7,8-TCDD		127 D	(35%-197%)		
6130004	SFRA-45	13C-2,3,7,8-TCDD		77.8 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		81.0 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		75.5 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		94.0 D	(28%-130%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6130

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6130004	SFRA-45	13C-1,2,3,4,6,7,8-HpCDD		87.6 D	(23%-140%)
		13C-OCDD		74.7 D	(17%-157%)
		13C-2,3,7,8-TCDF		85.6 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.1 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.0 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.8 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.3 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.5 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.3 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.0 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.1 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		116 D	(35%-197%)
		6130005	SFRA-46	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				77.3 D	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				74.1 D	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				84.8 D	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				84.3 D	(23%-140%)
13C-OCDD				72.8 D	(17%-157%)
13C-2,3,7,8-TCDF				87.0 D	(24%-169%)
13C-1,2,3,7,8-PeCDF				78.4 D	(24%-185%)
13C-2,3,4,7,8-PeCDF				81.7 D	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				75.5 D	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				83.7 D	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				81.6 D	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				66.4 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				86.7 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				72.5 D	(26%-138%)
37Cl-2,3,7,8-TCDD		129 D	(35%-197%)		
6130007	SFRA-48	13C-2,3,7,8-TCDD		84.7 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.5 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.3 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		94.9 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.6 D	(23%-140%)
		13C-OCDD		79.6 D	(17%-157%)
		13C-2,3,7,8-TCDF		87.8 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.9 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.2 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.9 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.1 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		89.9 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		72.9 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.9 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.5 D	(26%-138%)
37Cl-2,3,7,8-TCDD		104 D	(35%-197%)		
6130010	SFRA-51	13C-2,3,7,8-TCDD		78.3 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.5 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		71.5 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		92.1 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.8 D	(23%-140%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6130

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6130010	SFRA-51	13C-OCDD		77.8 D	(17%-157%)
		13C-2,3,7,8-TCDF		86.7 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		81.7 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.7 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		75.1 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		84.7 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.1 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		65.3 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.1 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.7 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		99.5 D	(35%-197%)
6130012	SFRA-53	13C-2,3,7,8-TCDD		68.6 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		70.8 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		65.2 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.1 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		71.4 D	(23%-140%)
		13C-OCDD		61.1 D	(17%-157%)
		13C-2,3,7,8-TCDF		76.4 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		72.2 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		72.0 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		68.6 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.8 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		73.9 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		57.1 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		71.8 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		66.3 D	(26%-138%)		
37Cl-2,3,7,8-TCDD		139 D	(35%-197%)		
6130013	SFRA-54	13C-2,3,7,8-TCDD		83.0 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.9 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.9 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		99.1 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.7 D	(23%-140%)
		13C-OCDD		87.7 D	(17%-157%)
		13C-2,3,7,8-TCDF		89.2 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.8 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.9 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		86.7 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		94.9 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.7 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		73.9 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.6 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		84.6 D	(26%-138%)		
37Cl-2,3,7,8-TCDD		132 D	(35%-197%)		
6130014	SFRA-55	13C-2,3,7,8-TCDD		78.2 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.4 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		71.7 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		92.1 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.8 D	(23%-140%)
		13C-OCDD		77.0 D	(17%-157%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6130

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6130014	SFRA-55	13C-2,3,7,8-TCDF		89.0 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.5 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.3 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.3 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.2 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.0 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.8 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.0 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		67.7 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		104 D	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6130
Client ID: LCS for batch 25960
Lab Sample ID: 12010460
Instrument: HRP750
Analyst: JTF

Sample Type: Laboratory Control Sample
Matrix: SOLID
Analysis Date: 05/21/2014 15:08
Prep Batch ID: 25960
Batch ID: 25962
Dilution: 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	22.5	112	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	102	102	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	103	103	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	108	108	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	107	107	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	102	102	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	210	105	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.6	93.1	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	98.4	98.4	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	99.9	99.9	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	102	102	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	101	101	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	98.5	98.5	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	103	103	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	101	101	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	99.6	99.6	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	187	93.4	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6130

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 25960

Matrix: SOLID

Lab Sample ID: 12010461

Instrument: HRP750

Analysis Date: 05/21/2014 15:55

Dilution: 1

Analyst: JTF

Prep Batch ID: 25960

Batch ID: 25962

CAS No.	Parmname	Amount	Spike	Recovery	Acceptance	RPD	Acceptance
		Added	Conc.		Limits	%	Limits
		pg/g	pg/g	%		%	
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.4	107	67-158	5.08	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	99.9	99.9	70-142	2.39	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	100	100	70-164	3.09	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	107	107	76-134	0.524	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	110	110	64-162	2.42	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	102	102	70-140	0.385	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	205	103	78-144	2.44	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.4	92	75-158	1.29	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	96.9	96.9	80-134	1.50	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	98.2	98.2	68-160	1.74	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	100	100	72-134	1.97	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	102	102	84-130	0.849	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	100	100	70-156	1.67	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	105	105	78-130	2.46	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	97.1	97.1	82-122	3.86	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	96.5	96.5	78-138	3.11	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	187	93.6	63-170	0.221	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6130
Client ID: SFRA-42(6130001MS)
Lab Sample ID: 12010462
Instrument: HRP750
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 19.4
Analysis Date: 05/22/2014 13:00
Prep Batch ID: 25960
Batch ID: 25962
Dilution: 10

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	MS 2,3,7,8-TCDD	200		7050	444 *	70-130
40321-76-4	MS 1,2,3,7,8-PeCDD	1000	U	1070	107	70-130
39227-28-6	MS 1,2,3,4,7,8-HxCDD	1000	U	1050	105	70-130
57653-85-7	MS 1,2,3,6,7,8-HxCDD	1000	J	1050	101	70-130
19408-74-3	MS 1,2,3,7,8,9-HxCDD	1000	U	1080	108	70-130
35822-46-9	MS 1,2,3,4,6,7,8-HpCDD	1000		1730	96.7	70-130
3268-87-9	MS 1,2,3,4,6,7,8,9-OCDD	2000		13700	-10.1 *	70-130
51207-31-9	MS 2,3,7,8-TCDF	200	J	237	102	70-130
57117-41-6	MS 1,2,3,7,8-PeCDF	1000	U	949	94.9	70-130
57117-31-4	MS 2,3,4,7,8-PeCDF	1000	U	910	91	70-130
70648-26-9	MS 1,2,3,4,7,8-HxCDF	1000	J	954	93.2	70-130
57117-44-9	MS 1,2,3,6,7,8-HxCDF	1000	U	976	97.6	70-130
60851-34-5	MS 2,3,4,6,7,8-HxCDF	1000	J	971	95.7	70-130
72918-21-9	MS 1,2,3,7,8,9-HxCDF	1000	U	979	97.8	70-130
67562-39-4	MS 1,2,3,4,6,7,8-HpCDF	1000	J	1070	92.5	70-130
55673-89-7	MS 1,2,3,4,7,8,9-HpCDF	1000	U	904	90.4	70-130
39001-02-0	MS 1,2,3,4,6,7,8,9-OCDF	2000	J	2100	93.7	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6130
Client ID: SFRA-42(6130001MSD)
Lab Sample ID: 12010463
Instrument: HRP750
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 19.4
Analysis Date: 05/22/2014 13:48
Prep Batch ID: 25960
Batch ID: 25962
Dilution: 10

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	198		5530	-320 *	70-130	24.2 *	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	992	U	1060	107	70-130	0.0925	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	992	U	1010	101	70-130	4.13	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	992	J	1040	100	70-130	1.32	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	992	U	1020	103	70-130	4.93	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	992		1810	105	70-130	4.19	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	1980		13200	-36.6 *	70-130	3.90	0-20
51207-31-9	MSD 2,3,7,8-TCDF	198	J	219	93.5	70-130	7.77	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	992	U	981	98.9	70-130	3.34	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	992	U	921	92.9	70-130	1.19	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	992	J	1000	99.1	70-130	5.20	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	992	U	1080	109	70-130	9.85	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	992	J	983	97.6	70-130	1.16	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	992	U	1010	102	70-130	3.04	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	992	J	1050	91.9	70-130	1.25	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	992	U	927	93.5	70-130	2.55	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	1980	J	2190	99.2	70-130	4.41	0-20

Method Blank Summary

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SDG Number: 6130
 Client ID: MB for batch 25960
 Lab Sample ID: 12010459
 Column:

Client: TETR001
 Instrument ID: HRP750
 Prep Date: 20-MAY-14

Matrix: SOLID
 Data File: A20MAY14B_5-3
 Analyzed: 05/21/14 16:42

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 25960	12010460	A20MAY14B_5-1	05/21/14	1508
02 LCSD for batch 25960	12010461	A20MAY14B_5-2	05/21/14	1555
03 SFRA-50	6130009	A20MAY14B_6-2	05/22/14	0311
04 SFRA-52	6130011	A20MAY14B_6-4	05/22/14	0446
05 SFRA-49	6130008	A20MAY14B_6-9	05/22/14	0843
06 SFRA-47	6130006	A20MAY14B_6-10	05/22/14	0933
07 SFRA-50	6130009	b22may14a-4	05/22/14	1111
08 SFRA-52	6130011	b22may14a-5	05/22/14	1130
09 SFRA-42	6130001	A20MAY14B_7-2	05/22/14	1213
10 SFRA-42(6130001MS)	12010462	A20MAY14B_7-3	05/22/14	1300
11 SFRA-42(6130001MSD)	12010463	A20MAY14B_7-4	05/22/14	1348
12 SFRA-43	6130002	A20MAY14B_7-5	05/22/14	1436
13 SFRA-44	6130003	A20MAY14B_7-6	05/22/14	1524
14 SFRA-45	6130004	A20MAY14B_7-7	05/22/14	1619
15 SFRA-46	6130005	A20MAY14B_7-8	05/22/14	1706
16 SFRA-48	6130007	A20MAY14B_7-9	05/22/14	1754
17 SFRA-51	6130010	A20MAY14B_7-10	05/22/14	1842
18 SFRA-53	6130012	A20MAY14B_7-11	05/22/14	1930
19 SFRA-54	6130013	A20MAY14B_7-12	05/22/14	2017
20 SFRA-55	6130014	A20MAY14B_7-13	05/22/14	2105

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010459		Matrix: SOLID
Client Sample: QC for batch 25960		
Client ID: MB for batch 25960		Prep Basis: As Received
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/21/2014 16:42	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_5-3		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.130	pg/g	0.0916	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.314	pg/g	0.145	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.244	pg/g	0.244	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.234	pg/g	0.234	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.344	pg/g	0.226	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.424	pg/g	0.258	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	2.10	pg/g	0.582	10.0
51207-31-9	2,3,7,8-TCDF	U	.106	pg/g	0.106	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.232	pg/g	0.088	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.192	pg/g	0.0856	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.212	pg/g	0.212	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.198	pg/g	0.198	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.184	pg/g	0.129	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.406	pg/g	0.406	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.258	pg/g	0.158	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.278	pg/g	0.278	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.490	pg/g	0.380	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		166	200	pg/g	82.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		178	200	pg/g	89.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		176	200	pg/g	87.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		180	200	pg/g	90.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		194	200	pg/g	96.9	(23%-140%)
13C-OCDD		370	400	pg/g	92.5	(17%-157%)
13C-2,3,7,8-TCDF		179	200	pg/g	89.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		174	200	pg/g	87.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		173	200	pg/g	86.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		171	200	pg/g	85.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		173	200	pg/g	86.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		178	200	pg/g	89.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		152	200	pg/g	76.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		185	200	pg/g	92.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		176	200	pg/g	87.8	(26%-138%)
37Cl-2,3,7,8-TCDD		19.9	20.0	pg/g	99.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010460		Matrix: SOLID
Client Sample: QC for batch 25960		
Client ID: LCS for batch 25960		Prep Basis: As Received
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/21/2014 15:08	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_5-1		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		22.5	pg/g	0.192	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.372	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		103	pg/g	0.560	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		108	pg/g	0.540	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		107	pg/g	0.584	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	0.694	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		210	pg/g	1.46	10.0
51207-31-9	2,3,7,8-TCDF		18.6	pg/g	0.163	1.00
57117-41-6	1,2,3,7,8-PeCDF		98.4	pg/g	0.432	5.00
57117-31-4	2,3,4,7,8-PeCDF		99.9	pg/g	0.412	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		102	pg/g	0.504	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.458	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		98.5	pg/g	0.498	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		103	pg/g	0.816	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.622	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.6	pg/g	1.06	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		187	pg/g	0.890	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		154	200	pg/g	77.0	(20%-175%)
13C-1,2,3,7,8-PeCDD		165	200	pg/g	82.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		163	200	pg/g	81.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		169	200	pg/g	84.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		176	200	pg/g	87.9	(22%-166%)
13C-OCDD		325	400	pg/g	81.4	(13%-199%)
13C-2,3,7,8-TCDF		172	200	pg/g	85.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		166	200	pg/g	83.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		164	200	pg/g	81.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		161	200	pg/g	80.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		166	200	pg/g	83.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		168	200	pg/g	84.2	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		142	200	pg/g	71.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		166	200	pg/g	83.0	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		155	200	pg/g	77.3	(20%-186%)
37Cl-2,3,7,8-TCDD		18.8	20.0	pg/g	94.0	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010461		Matrix: SOLID
Client Sample: QC for batch 25960		
Client ID: LCSD for batch 25960		Prep Basis: As Received
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/21/2014 15:55	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_5-2		Dilution: 1
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.4	pg/g	0.107	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.9	pg/g	0.222	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		100	pg/g	0.376	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		107	pg/g	0.394	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		110	pg/g	0.408	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	0.356	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		205	pg/g	0.712	10.0
51207-31-9	2,3,7,8-TCDF		18.4	pg/g	0.117	1.00
57117-41-6	1,2,3,7,8-PeCDF		96.9	pg/g	0.226	5.00
57117-31-4	2,3,4,7,8-PeCDF		98.2	pg/g	0.224	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		100	pg/g	0.388	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		102	pg/g	0.372	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		100	pg/g	0.372	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		105	pg/g	0.570	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.1	pg/g	0.280	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.5	pg/g	0.460	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		187	pg/g	0.648	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		169	200	pg/g	84.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		185	200	pg/g	92.6	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		170	200	pg/g	85.1	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		175	200	pg/g	87.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		191	200	pg/g	95.6	(22%-166%)
13C-OCDD		374	400	pg/g	93.5	(13%-199%)
13C-2,3,7,8-TCDF		185	200	pg/g	92.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		181	200	pg/g	90.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		182	200	pg/g	90.8	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		167	200	pg/g	83.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		167	200	pg/g	83.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		170	200	pg/g	85.1	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		151	200	pg/g	75.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		179	200	pg/g	89.5	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		178	200	pg/g	88.8	(20%-186%)
37Cl-2,3,7,8-TCDD		19.6	20.0	pg/g	97.8	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010462	Date Collected: 05/16/2014 09:20	Matrix: SOLID
Client Sample: QC for batch 25960	Date Received: 05/20/2014 11:10	%Moisture: 19.4
Client ID: SFRA-42(6130001MS)		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 13:00	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-3		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.24 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		7050	pg/g	10.7	100
40321-76-4	1,2,3,7,8-PeCDD		1070	pg/g	13.0	500
39227-28-6	1,2,3,4,7,8-HxCDD		1050	pg/g	30.4	500
57653-85-7	1,2,3,6,7,8-HxCDD		1050	pg/g	32.8	500
19408-74-3	1,2,3,7,8,9-HxCDD		1080	pg/g	33.6	500
35822-46-9	1,2,3,4,6,7,8-HpCDD		1730	pg/g	43.6	500
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13700	pg/g	138	1000
51207-31-9	2,3,7,8-TCDF		237	pg/g	12.5	100
57117-41-6	1,2,3,7,8-PeCDF		949	pg/g	20.6	500
57117-31-4	2,3,4,7,8-PeCDF		910	pg/g	19.7	500
70648-26-9	1,2,3,4,7,8-HxCDF		954	pg/g	28.6	500
57117-44-9	1,2,3,6,7,8-HxCDF		976	pg/g	28.6	500
60851-34-5	2,3,4,6,7,8-HxCDF		971	pg/g	29.8	500
72918-21-9	1,2,3,7,8,9-HxCDF		979	pg/g	53.6	500
67562-39-4	1,2,3,4,6,7,8-HpCDF		1070	pg/g	19.2	500
55673-89-7	1,2,3,4,7,8,9-HpCDF		904	pg/g	35.8	500
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2100	pg/g	74.2	1000

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1670	2000	pg/g	83.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1720	2000	pg/g	85.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1600	2000	pg/g	80.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1940	2000	pg/g	97.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1760	2000	pg/g	88.1	(23%-140%)
13C-OCDD		3280	4000	pg/g	82.0	(17%-157%)
13C-2,3,7,8-TCDF		1830	2000	pg/g	91.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1740	2000	pg/g	87.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1810	2000	pg/g	90.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1680	2000	pg/g	83.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1800	2000	pg/g	90.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1810	2000	pg/g	90.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1540	2000	pg/g	76.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1840	2000	pg/g	91.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1590	2000	pg/g	79.7	(26%-138%)
37Cl-2,3,7,8-TCDD		205	200	pg/g	103	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6130	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010463	Date Collected: 05/16/2014 09:20	Matrix: SOLID
Client Sample: QC for batch 25960	Date Received: 05/20/2014 11:10	%Moisture: 19.4
Client ID: SFRA-42(6130001MSD)		Prep Basis: Dry Weight
Batch ID: 25962	Method: EPA Method 1613B	
Run Date: 05/22/2014 13:48	Analyst: JTF	Instrument: HRP750
Data File: A20MAY14B_7-4		Dilution: 10
Prep Batch: 25960	Prep Method: SW846 3540C	
Prep Date: 20-MAY-14	Prep Aliquot: 1.25 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		5530	pg/g	24.2	99.2
40321-76-4	1,2,3,7,8-PeCDD		1060	pg/g	21.4	496
39227-28-6	1,2,3,4,7,8-HxCDD		1010	pg/g	48.4	496
57653-85-7	1,2,3,6,7,8-HxCDD		1040	pg/g	49.0	496
19408-74-3	1,2,3,7,8,9-HxCDD		1020	pg/g	51.6	496
35822-46-9	1,2,3,4,6,7,8-HpCDD		1810	pg/g	59.1	496
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13200	pg/g	224	992
51207-31-9	2,3,7,8-TCDF		219	pg/g	28.6	99.2
57117-41-6	1,2,3,7,8-PeCDF		981	pg/g	25.6	496
57117-31-4	2,3,4,7,8-PeCDF		921	pg/g	26.2	496
70648-26-9	1,2,3,4,7,8-HxCDF		1000	pg/g	46.2	496
57117-44-9	1,2,3,6,7,8-HxCDF		1080	pg/g	50.4	496
60851-34-5	2,3,4,6,7,8-HxCDF		983	pg/g	45.2	496
72918-21-9	1,2,3,7,8,9-HxCDF		1010	pg/g	75.2	496
67562-39-4	1,2,3,4,6,7,8-HpCDF		1050	pg/g	27.6	496
55673-89-7	1,2,3,4,7,8,9-HpCDF		927	pg/g	48.4	496
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2190	pg/g	159	992

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1600	1980	pg/g	80.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1680	1980	pg/g	84.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1600	1980	pg/g	80.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1820	1980	pg/g	91.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1610	1980	pg/g	80.9	(23%-140%)
13C-OCDD		3020	3970	pg/g	76.0	(17%-157%)
13C-2,3,7,8-TCDF		1790	1980	pg/g	90.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1670	1980	pg/g	83.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1720	1980	pg/g	86.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1560	1980	pg/g	78.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1630	1980	pg/g	82.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1670	1980	pg/g	84.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1400	1980	pg/g	70.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1690	1980	pg/g	84.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1490	1980	pg/g	74.9	(26%-138%)
37Cl-2,3,7,8-TCDD		205	198	pg/g	104	(35%-197%)

Comments:

June 02, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6160

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 23, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Enclosures

Page: 1 of 1
Project #:
CFA Quote #:
COC Number (1):
PO Number:

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
3306 Kitty Hawk Rd. Suite 120
Wilmington, NC 28405
Phone: (910) 795-0421

CFA Work Order Number: 6160

Client Name: Tetra Tech, Inc. Phone # 314-517-6778

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Project/Site Name: Streecker Forest Removal Action Fax #:
Address: 20 Jamestown Farm Dr. Flayissant MO 63051
Collected by: R Clayton Send Results To: dave.kinroth@charter.net
rclayton@scgullenvirotech.com

<-- Preservative Type (6)

Comments
Note: extra sample is required for sample specific QC

Sample ID <i>* For composites - indicate start and stop date/time</i>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers
SFRA-57	5-22-14	1120			S	1 X
SFRA-58	5-22-14	1345			S	1 X
SFRA-56	5-21-14	1055			S	1 X
SFRA-59	5-22-14	1420			S	1 X
SFRA-60	5-22-14	1550			S	1 X

TAT Requested: Normal: Rush: Specify: 72 hr (Subject to Surchage) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time Zone
Eastern Pacific
Central Other _____
Mountain

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
R Clayton	5-22-14	1615	[Signature]	5/23/14	1010

Sample Shipping and Delivery Details

CFA PM: Cynde Larkins
Method of Shipment: Fed EX Date Shipped:
Airbill #: 8042 3157 0870
Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY

YELLOW = FILE

PINK = CLIENT

For Lab Receiving Use Only

Custody Seal Intact?
YES NO

Cooler Temp:
3.3 C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: <u>Tetra Tech</u>	Work Order: <u>6160</u>
Shipping Company: <u>Fedex</u>	Date/Time Received: <u>5/23/14</u>

Suspected Hazard Information	Yes	NA	No	DOE Site Sample Packages	Yes	NA	No*
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>	Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>	Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) <u>3.3</u>
4	Aqueous samples found to have visible solids?			<input checked="" type="checkbox"/>	Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?			<input checked="" type="checkbox"/>	Sample IDs, containers affected and pH observed: if preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?			<input checked="" type="checkbox"/>	Sample IDs, containers affected: if preservative added, Lot#:
7	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: Dee Date: 5/23/14

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6160**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 25980
Clean Up Batch Number: 25979
Extraction Batch Number: 26012

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6160001	SFRA-57
6160002	SFRA-58
6160003	SFRA-56
6160004	SFRA-59
6160005	SFRA-60
12010505	Method Blank (MB)
12010506	Laboratory Control Sample (LCS)
12010507	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 25980.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

Samples 6160002 (SFRA-58), 6160003 (SFRA-56) and 6160005 (SFRA-60)- Batch 25980 were diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6160 CFA Work Order: 6160


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 02 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 6160001	Date Collected: 05/22/2014 11:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/23/2014 10:10	%Moisture: 20.7
Client ID: SFRA-57		Prep Basis: Dry Weight
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/28/2014 18:51	Analyst: JTF	Instrument: HRP750
Data File: A27MAY14D_3-6		Dilution: 1
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		344	pg/g	1.79	11.2
40321-76-4	1,2,3,7,8-PeCDD	U	1.96	pg/g	1.96	55.8
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.86	pg/g	3.35	55.8
57653-85-7	1,2,3,6,7,8-HxCDD	U	25	pg/g	25.0	55.8
19408-74-3	1,2,3,7,8,9-HxCDD	U	9.11	pg/g	9.11	55.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		705	pg/g	7.48	55.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13400	pg/g	13.0	112
51207-31-9	2,3,7,8-TCDF	J	3.82	pg/g	2.20	11.2
57117-41-6	1,2,3,7,8-PeCDF	U	1.49	pg/g	1.49	55.8
57117-31-4	2,3,4,7,8-PeCDF	U	1.65	pg/g	1.65	55.8
70648-26-9	1,2,3,4,7,8-HxCDF	J	4.35	pg/g	2.63	55.8
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.66	pg/g	2.66	55.8
60851-34-5	2,3,4,6,7,8-HxCDF	J	4.02	pg/g	2.66	55.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.66	pg/g	3.66	55.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		148	pg/g	2.32	55.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	11.3	pg/g	3.35	55.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1040	pg/g	7.21	112

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1830	2230	pg/g	81.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		2000	2230	pg/g	89.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1860	2230	pg/g	83.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1740	2230	pg/g	77.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2190	2230	pg/g	98.0	(23%-140%)
13C-OCDD		4600	4470	pg/g	103	(17%-157%)
13C-2,3,7,8-TCDF		1940	2230	pg/g	87.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1880	2230	pg/g	84.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		2000	2230	pg/g	89.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1830	2230	pg/g	82.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1780	2230	pg/g	79.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1830	2230	pg/g	82.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1740	2230	pg/g	78.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1950	2230	pg/g	87.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2030	2230	pg/g	90.8	(26%-138%)
37Cl-2,3,7,8-TCDD		212	223	pg/g	95.0	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 6160002	Date Collected: 05/22/2014 13:45	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/23/2014 10:10	%Moisture: 22.5
Client ID: SFRA-58		Prep Basis: Dry Weight
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/30/2014 11:02	Analyst: JTF	Instrument: HRP750
Data File: A30MAY14A-3		Dilution: 10
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 1.18 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		26000	pg/g	8.39	109
40321-76-4	1,2,3,7,8-PeCDD	U	11.8	pg/g	11.8	547
39227-28-6	1,2,3,4,7,8-HxCDD	U	16.2	pg/g	16.2	547
57653-85-7	1,2,3,6,7,8-HxCDD	J	102	pg/g	17.2	547
19408-74-3	1,2,3,7,8,9-HxCDD	J	32.7	pg/g	17.7	547
35822-46-9	1,2,3,4,6,7,8-HpCDD		901	pg/g	15.6	547
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10900	pg/g	33.9	1090
51207-31-9	2,3,7,8-TCDF		132	pg/g	10.3	109
57117-41-6	1,2,3,7,8-PeCDF	U	7.89	pg/g	7.89	547
57117-31-4	2,3,4,7,8-PeCDF	U	12.9	pg/g	12.9	547
70648-26-9	1,2,3,4,7,8-HxCDF	U	13.1	pg/g	13.1	547
57117-44-9	1,2,3,6,7,8-HxCDF	U	13.3	pg/g	13.3	547
60851-34-5	2,3,4,6,7,8-HxCDF	J	19.8	pg/g	13.1	547
72918-21-9	1,2,3,7,8,9-HxCDF	U	18.5	pg/g	18.5	547
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	251	pg/g	6.27	547
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	21.3	pg/g	9.68	547
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	450	pg/g	30.8	1090

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1870	2190	pg/g	85.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1930	2190	pg/g	88.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1890	2190	pg/g	86.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1710	2190	pg/g	78.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2010	2190	pg/g	92.0	(23%-140%)
13C-OCDD		3930	4370	pg/g	89.9	(17%-157%)
13C-2,3,7,8-TCDF		1980	2190	pg/g	90.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	2190	pg/g	87.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1920	2190	pg/g	88.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1810	2190	pg/g	83.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1650	2190	pg/g	75.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1770	2190	pg/g	81.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1720	2190	pg/g	78.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1860	2190	pg/g	85.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1880	2190	pg/g	86.1	(26%-138%)
37Cl-2,3,7,8-TCDD		310	219	pg/g	142	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 6160002	Date Collected: 05/22/2014 13:45	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/23/2014 10:10	%Moisture: 22.5
Client ID: SFRA-58		Prep Basis: Dry Weight
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/29/2014 10:40	Analyst: JTF	Instrument: HRP763
Data File: b29may14b-4		Dilution: 10
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 1.18 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		131	pg/g	15.3	109

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 6160003	Date Collected: 05/21/2014 10:55	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/23/2014 10:10	%Moisture: 25.2
Client ID: SFRA-56		Prep Basis: Dry Weight
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/30/2014 11:50	Analyst: JTF	Instrument: HRP750
Data File: A30MAY14A-4		Dilution: 10
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		15600	pg/g	16.3	115
40321-76-4	1,2,3,7,8-PeCDD	J	21.4	pg/g	18.8	577
39227-28-6	1,2,3,4,7,8-HxCDD	U	25.8	pg/g	25.8	577
57653-85-7	1,2,3,6,7,8-HxCDD	J	256	pg/g	34.1	577
19408-74-3	1,2,3,7,8,9-HxCDD	J	81.2	pg/g	31.4	577
35822-46-9	1,2,3,4,6,7,8-HpCDD		4360	pg/g	45.9	577
3268-87-9	1,2,3,4,6,7,8,9-OCDD		38000	pg/g	55.8	1150
51207-31-9	2,3,7,8-TCDF	J	88.6	pg/g	18.6	115
57117-41-6	1,2,3,7,8-PeCDF	U	11.1	pg/g	11.1	577
57117-31-4	2,3,4,7,8-PeCDF	U	23.6	pg/g	23.6	577
70648-26-9	1,2,3,4,7,8-HxCDF	J	39.2	pg/g	24.9	577
57117-44-9	1,2,3,6,7,8-HxCDF	U	30.6	pg/g	30.6	577
60851-34-5	2,3,4,6,7,8-HxCDF	J	40.3	pg/g	26.1	577
72918-21-9	1,2,3,7,8,9-HxCDF	U	36.7	pg/g	36.7	577
67562-39-4	1,2,3,4,6,7,8-HpCDF		937	pg/g	19.6	577
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	95.0	pg/g	32.1	577
39001-02-0	1,2,3,4,6,7,8,9-OCDF		3970	pg/g	37.6	1150

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1990	2310	pg/g	86.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1980	2310	pg/g	86.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2030	2310	pg/g	88.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1500	2310	pg/g	64.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2170	2310	pg/g	94.3	(23%-140%)
13C-OCDD		4380	4610	pg/g	95.0	(17%-157%)
13C-2,3,7,8-TCDF		2110	2310	pg/g	91.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2000	2310	pg/g	86.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1990	2310	pg/g	86.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2050	2310	pg/g	88.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1820	2310	pg/g	79.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1970	2310	pg/g	85.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1800	2310	pg/g	77.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2040	2310	pg/g	88.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2090	2310	pg/g	90.6	(26%-138%)
37Cl-2,3,7,8-TCDD		291	231	pg/g	126	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 6160004	Date Collected: 05/22/2014 14:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/23/2014 10:10	%Moisture: 21.4
Client ID: SFRA-59		Prep Basis: Dry Weight
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/30/2014 12:39	Analyst: JTF	Instrument: HRP750
Data File: A30MAY14A-5		Dilution: 1
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 1.06 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3890	pg/g	0.996	12.0
40321-76-4	1,2,3,7,8-PeCDD	J	1.54	pg/g	1.30	60.0
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.05	pg/g	1.36	60.0
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	28.6	pg/g	2.14	60.0
19408-74-3	1,2,3,7,8,9-HxCDD	J	12.2	pg/g	1.79	60.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		392	pg/g	4.01	60.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9570	pg/g	4.61	120
51207-31-9	2,3,7,8-TCDF		21.1	pg/g	1.18	12.0
57117-41-6	1,2,3,7,8-PeCDF	J	1.25	pg/g	0.753	60.0
57117-31-4	2,3,4,7,8-PeCDF	J	3.14	pg/g	0.777	60.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.53	pg/g	3.53	60.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	3	pg/g	3.00	60.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	4.51	pg/g	4.51	60.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.55	pg/g	1.55	60.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		81.9	pg/g	0.746	60.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	4.97	pg/g	1.06	60.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		201	pg/g	1.41	120

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1960	2400	pg/g	81.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1900	2400	pg/g	79.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1950	2400	pg/g	81.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1280	2400	pg/g	53.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2280	2400	pg/g	95.1	(23%-140%)
13C-OCDD		5040	4800	pg/g	105	(17%-157%)
13C-2,3,7,8-TCDF		1970	2400	pg/g	82.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1870	2400	pg/g	77.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1870	2400	pg/g	77.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1890	2400	pg/g	78.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1750	2400	pg/g	73.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1860	2400	pg/g	77.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1840	2400	pg/g	76.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2000	2400	pg/g	83.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2190	2400	pg/g	91.3	(26%-138%)
37Cl-2,3,7,8-TCDD		223	240	pg/g	92.9	(35%-197%)

Comments:

J Value is estimated

Q Quantitative Interference

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 6160004	Date Collected: 05/22/2014 14:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/23/2014 10:10	%Moisture: 21.4
Client ID: SFRA-59		Prep Basis: Dry Weight
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/29/2014 11:19	Analyst: JTF	Instrument: HRP763
Data File: b29may14b-6		Dilution: 1
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 1.06 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		21.1	pg/g	2.45	12.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 6160005	Date Collected: 05/22/2014 15:50	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/23/2014 10:10	%Moisture: 19.6
Client ID: SFRA-60		Prep Basis: Dry Weight
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/30/2014 13:27	Analyst: JTF	Instrument: HRP750
Data File: A30MAY14A-6		Dilution: 5
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		5520	pg/g	7.68	55.0
40321-76-4	1,2,3,7,8-PeCDD	J	6.16	pg/g	5.61	275
39227-28-6	1,2,3,4,7,8-HxCDD	U	13	pg/g	13.0	275
57653-85-7	1,2,3,6,7,8-HxCDD	J	47.1	pg/g	12.6	275
19408-74-3	1,2,3,7,8,9-HxCDD	U	13.6	pg/g	13.6	275
35822-46-9	1,2,3,4,6,7,8-HpCDD		600	pg/g	11.7	275
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12900	pg/g	25.5	550
51207-31-9	2,3,7,8-TCDF	J	29.4	pg/g	9.33	55.0
57117-41-6	1,2,3,7,8-PeCDF	U	4.62	pg/g	4.62	275
57117-31-4	2,3,4,7,8-PeCDF	J	6.34	pg/g	4.97	275
70648-26-9	1,2,3,4,7,8-HxCDF	U	5.41	pg/g	5.41	275
57117-44-9	1,2,3,6,7,8-HxCDF	U	5.61	pg/g	5.61	275
60851-34-5	2,3,4,6,7,8-HxCDF	U	5.94	pg/g	5.94	275
72918-21-9	1,2,3,7,8,9-HxCDF	U	8.56	pg/g	8.56	275
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	123	pg/g	5.48	275
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	12.0	pg/g	8.23	275
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	386	pg/g	12.3	550

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1470	2200	pg/g	66.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1550	2200	pg/g	70.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1440	2200	pg/g	65.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1290	2200	pg/g	58.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1560	2200	pg/g	71.0	(23%-140%)
13C-OCDD		3070	4400	pg/g	69.7	(17%-157%)
13C-2,3,7,8-TCDF		1460	2200	pg/g	66.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1510	2200	pg/g	68.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1550	2200	pg/g	70.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1430	2200	pg/g	65.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1290	2200	pg/g	58.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1370	2200	pg/g	62.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1280	2200	pg/g	58.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1430	2200	pg/g	65.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1510	2200	pg/g	68.4	(26%-138%)
37Cl-2,3,7,8-TCDD		225	220	pg/g	102	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6160

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010506	LCS for batch 26012	13C-2,3,7,8-TCDD		79.1	(20%-175%)
		13C-1,2,3,7,8-PeCDD		88.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		85.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		73.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		95.3	(22%-166%)
		13C-OCDD		95.9	(13%-199%)
		13C-2,3,7,8-TCDF		87.0	(22%-152%)
		13C-1,2,3,7,8-PeCDF		86.4	(21%-192%)
		13C-2,3,4,7,8-PeCDF		87.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		82.3	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		79.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		82.6	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		75.5	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		88.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		87.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		89.3	(31%-191%)
12010507	LCSD for batch 26012	13C-2,3,7,8-TCDD		82.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		100	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		85.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		82.4	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		95.3	(22%-166%)
		13C-OCDD		96.4	(13%-199%)
		13C-2,3,7,8-TCDF		92.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		85.1	(21%-192%)
		13C-2,3,4,7,8-PeCDF		98.7	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		86.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		84.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		80.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		89.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		92.0	(20%-186%)
		37Cl-2,3,7,8-TCDD		93.6	(31%-191%)
12010505	MB for batch 26012	13C-2,3,7,8-TCDD		76.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.0	(23%-140%)
		13C-OCDD		83.4	(17%-157%)
		13C-2,3,7,8-TCDF		86.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		72.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		84.7	(35%-197%)
6160001	SFRA-57	13C-2,3,7,8-TCDD		81.8	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6160

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6160001	SFRA-57	13C-1,2,3,7,8-PeCDD		89.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		98.0	(23%-140%)
		13C-OCDD		103	(17%-157%)
		13C-2,3,7,8-TCDF		87.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		87.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		90.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		95.0	(35%-197%)
6160002	SFRA-58	13C-2,3,7,8-TCDD		85.6	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		88.3	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.3	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.3	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.0	D (23%-140%)
		13C-OCDD		89.9	D (17%-157%)
		13C-2,3,7,8-TCDF		90.8	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		87.2	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		88.0	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		83.0	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.6	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.1	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.8	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.3	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		86.1	D (26%-138%)
37Cl-2,3,7,8-TCDD		142	D (35%-197%)		
6160003	SFRA-56	13C-2,3,7,8-TCDD		86.5	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		86.1	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		88.2	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		64.9	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.3	D (23%-140%)
		13C-OCDD		95.0	D (17%-157%)
		13C-2,3,7,8-TCDF		91.5	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		86.6	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		86.2	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		88.8	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.1	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.6	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		77.9	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.3	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		90.6	D (26%-138%)
37Cl-2,3,7,8-TCDD		126	D (35%-197%)		
6160004	SFRA-59	13C-2,3,7,8-TCDD		81.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.0	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6160

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6160004	SFRA-59	13C-1,2,3,4,7,8-HxCDD	Q	81.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		53.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		95.1	(23%-140%)
		13C-OCDD		105	(17%-157%)
		13C-2,3,7,8-TCDF		82.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		77.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		77.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		76.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		91.3	(26%-138%)
		37Cl-2,3,7,8-TCDD		92.9	(35%-197%)
6160005	SFRA-60	13C-2,3,7,8-TCDD	66.9	D	(25%-164%)
		13C-1,2,3,7,8-PeCDD	70.5	D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD	65.6	D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	58.7	D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD	71.0	D	(23%-140%)
		13C-OCDD	69.7	D	(17%-157%)
		13C-2,3,7,8-TCDF	66.1	D	(24%-169%)
		13C-1,2,3,7,8-PeCDF	68.7	D	(24%-185%)
		13C-2,3,4,7,8-PeCDF	70.3	D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF	65.1	D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF	58.5	D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF	62.3	D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF	58.4	D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF	65.1	D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF	68.4	D	(26%-138%)		
37Cl-2,3,7,8-TCDD	102	D	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6160

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26012

Matrix: SOIL

Lab Sample ID: 12010506

Instrument: HRP750

Analysis Date: 05/28/2014 16:27

Dilution: 1

Analyst: JTF

Prep Batch ID: 26012

Batch ID: 25980

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.4	102	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	98.4	98.4	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	94.5	94.5	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	104	104	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	105	105	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	96.4	96.4	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	194	97	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.4	92	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	97.2	97.2	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	96.0	96	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	95.7	95.7	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	93.5	93.5	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	97.2	97.2	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	103	103	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	92.7	92.7	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	96.1	96.1	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	187	93.5	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6160

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26012

Matrix: SOIL

Lab Sample ID: 12010507

Instrument: HRP750

Analysis Date: 05/28/2014 17:15

Dilution: 1

Analyst: JTF

Prep Batch ID: 26012

Batch ID: 25980

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.1	106	67-158	3.56	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	97.5	97.5	70-142	0.931	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	96.6	96.6	70-164	2.18	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	101	101	76-134	2.58	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	103	103	64-162	2.25	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	100	100	70-140	3.67	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	197	98.6	78-144	1.58	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.4	92.1	75-158	0.120	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	97.9	97.9	80-134	0.781	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	97.8	97.8	68-160	1.80	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	95.1	95.1	72-134	0.661	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	98.0	98	84-130	4.71	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	98.2	98.2	70-156	1.02	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	101	101	78-130	1.78	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	95.0	95	82-122	2.44	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	95.6	95.6	78-138	0.474	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	188	94	63-170	0.608	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6160 Client: TETR001 Matrix: SOIL
Client ID: MB for batch 26012 Instrument ID: HRP750 Data File: A27MAY14D_3-5
Lab Sample ID: 12010505 Prep Date: 27-MAY-14 Analyzed: 05/28/14 18:03
Column:

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26012	12010506	A27MAY14D_3-3	05/28/14	1627
02 LCSD for batch 26012	12010507	A27MAY14D_3-4	05/28/14	1715
03 SFRA-57	6160001	A27MAY14D_3-6	05/28/14	1851
04 SFRA-58	6160002	b29may14b-4	05/29/14	1040
05 SFRA-59	6160004	b29may14b-6	05/29/14	1119
06 SFRA-58	6160002	A30MAY14A-3	05/30/14	1102
07 SFRA-56	6160003	A30MAY14A-4	05/30/14	1150
08 SFRA-59	6160004	A30MAY14A-5	05/30/14	1239
09 SFRA-60	6160005	A30MAY14A-6	05/30/14	1327

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010505		Matrix: SOIL
Client Sample: QC for batch 26012		
Client ID: MB for batch 26012		Prep Basis: As Received
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/28/2014 18:03	Analyst: JTF	Instrument: HRP750
Data File: A27MAY14D_3-5		Dilution: 1
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.115	pg/g	0.115	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.222	pg/g	0.222	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.242	pg/g	0.242	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.204	pg/g	0.195	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.204	pg/g	0.204	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.480	pg/g	0.224	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	5.27	pg/g	0.796	10.0
51207-31-9	2,3,7,8-TCDF	U	.0996	pg/g	0.0996	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.158	pg/g	0.0916	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.172	pg/g	0.0894	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.156	pg/g	0.098	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.206	pg/g	0.102	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.208	pg/g	0.102	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.332	pg/g	0.149	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.308	pg/g	0.0804	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.180	pg/g	0.127	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	1.02	pg/g	0.460	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		152	200	pg/g	76.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		178	200	pg/g	89.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		164	200	pg/g	82.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	78.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		176	200	pg/g	88.0	(23%-140%)
13C-OCDD		333	400	pg/g	83.4	(17%-157%)
13C-2,3,7,8-TCDF		174	200	pg/g	86.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		179	200	pg/g	89.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		184	200	pg/g	91.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		165	200	pg/g	82.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		154	200	pg/g	76.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		160	200	pg/g	80.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		146	200	pg/g	72.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		166	200	pg/g	83.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		166	200	pg/g	83.0	(26%-138%)
37Cl-2,3,7,8-TCDD		16.9	20.0	pg/g	84.7	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010506		Matrix: SOIL
Client Sample: QC for batch 26012		
Client ID: LCS for batch 26012		Prep Basis: As Received
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/28/2014 16:27	Analyst: JTF	Instrument: HRP750
Data File: A27MAY14D_3-3		Dilution: 1
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.4	pg/g	0.140	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.4	pg/g	0.189	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		94.5	pg/g	0.414	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		104	pg/g	0.426	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	0.448	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.4	pg/g	0.512	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		194	pg/g	1.05	10.0
51207-31-9	2,3,7,8-TCDF		18.4	pg/g	0.170	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.2	pg/g	0.228	5.00
57117-31-4	2,3,4,7,8-PeCDF		96.0	pg/g	0.234	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		95.7	pg/g	0.348	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		93.5	pg/g	0.362	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		97.2	pg/g	0.350	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		103	pg/g	0.512	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		92.7	pg/g	0.350	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.1	pg/g	0.578	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		187	pg/g	0.574	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		158	200	pg/g	79.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		177	200	pg/g	88.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		172	200	pg/g	85.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		147	200	pg/g	73.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		191	200	pg/g	95.3	(22%-166%)
13C-OCDD		384	400	pg/g	95.9	(13%-199%)
13C-2,3,7,8-TCDF		174	200	pg/g	87.0	(22%-152%)
13C-1,2,3,7,8-PeCDF		173	200	pg/g	86.4	(21%-192%)
13C-2,3,4,7,8-PeCDF		175	200	pg/g	87.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		165	200	pg/g	82.3	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		158	200	pg/g	79.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		165	200	pg/g	82.6	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		151	200	pg/g	75.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		177	200	pg/g	88.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		175	200	pg/g	87.3	(20%-186%)
37Cl-2,3,7,8-TCDD		17.9	20.0	pg/g	89.3	(31%-191%)

Comments:

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SDG Number: 6160	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010507		Matrix: SOIL
Client Sample: QC for batch 26012		
Client ID: LCSD for batch 26012		Prep Basis: As Received
Batch ID: 25980	Method: EPA Method 1613B	
Run Date: 05/28/2014 17:15	Analyst: JTF	Instrument: HRP750
Data File: A27MAY14D_3-4		Dilution: 1
Prep Batch: 26012	Prep Method: SW846 3540C	
Prep Date: 27-MAY-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.1	pg/g	0.140	1.00
40321-76-4	1,2,3,7,8-PeCDD		97.5	pg/g	0.194	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.6	pg/g	0.268	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		101	pg/g	0.282	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		103	pg/g	0.292	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		100	pg/g	0.482	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		197	pg/g	0.722	10.0
51207-31-9	2,3,7,8-TCDF		18.4	pg/g	0.113	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.9	pg/g	0.232	5.00
57117-31-4	2,3,4,7,8-PeCDF		97.8	pg/g	0.189	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		95.1	pg/g	0.384	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.0	pg/g	0.396	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		98.2	pg/g	0.400	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		101	pg/g	0.548	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		95.0	pg/g	0.362	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		95.6	pg/g	0.538	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		188	pg/g	0.614	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		164	200	pg/g	82.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		200	200	pg/g	100	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		171	200	pg/g	85.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		165	200	pg/g	82.4	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		191	200	pg/g	95.3	(22%-166%)
13C-OCDD		386	400	pg/g	96.4	(13%-199%)
13C-2,3,7,8-TCDF		186	200	pg/g	92.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		170	200	pg/g	85.1	(21%-192%)
13C-2,3,4,7,8-PeCDF		197	200	pg/g	98.7	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		173	200	pg/g	86.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		162	200	pg/g	80.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		169	200	pg/g	84.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		180	200	pg/g	89.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		184	200	pg/g	92.0	(20%-186%)
37Cl-2,3,7,8-TCDD		18.7	20.0	pg/g	93.6	(31%-191%)

Comments:

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176001	Date Collected: 05/28/2014 14:20	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 22.5
Client ID: SFRA-61		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 13:16	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-4		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2490	pg/g	1.67	12.4
40321-76-4	1,2,3,7,8-PeCDD	U	2.22	pg/g	2.22	62.0
39227-28-6	1,2,3,4,7,8-HxCDD	J	2.95	pg/g	1.96	62.0
57653-85-7	1,2,3,6,7,8-HxCDD	J	25.7	pg/g	2.06	62.0
19408-74-3	1,2,3,7,8,9-HxCDD	J	8.90	pg/g	2.14	62.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		387	pg/g	4.69	62.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12200	pg/g	14.4	124
51207-31-9	2,3,7,8-TCDF	J	12.1	pg/g	1.85	12.4
57117-41-6	1,2,3,7,8-PeCDF	U	.881	pg/g	0.881	62.0
57117-31-4	2,3,4,7,8-PeCDF	U	1.98	pg/g	1.98	62.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.73	pg/g	2.73	62.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.4	pg/g	2.40	62.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.1	pg/g	3.10	62.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.72	pg/g	3.72	62.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		88.3	pg/g	1.53	62.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	4.22	pg/g	4.22	62.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		177	pg/g	3.89	124

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2030	2480	pg/g	81.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		2190	2480	pg/g	88.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2050	2480	pg/g	82.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1900	2480	pg/g	76.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2280	2480	pg/g	92.0	(23%-140%)
13C-OCDD		4510	4960	pg/g	90.9	(17%-157%)
13C-2,3,7,8-TCDF		2130	2480	pg/g	86.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		2110	2480	pg/g	85.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		2150	2480	pg/g	86.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2000	2480	pg/g	80.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1880	2480	pg/g	75.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1970	2480	pg/g	79.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1750	2480	pg/g	70.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1990	2480	pg/g	80.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1920	2480	pg/g	77.5	(26%-138%)
37Cl-2,3,7,8-TCDD		253	248	pg/g	102	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176002	Date Collected: 05/28/2014 16:45	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 21.3
Client ID: SFRA-62		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 15:41	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-7		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1460	pg/g	1.62	11.8
40321-76-4	1,2,3,7,8-PeCDD	J	4.33	pg/g	1.90	58.8
39227-28-6	1,2,3,4,7,8-HxCDD	J	4.85	pg/g	3.27	58.8
57653-85-7	1,2,3,6,7,8-HxCDD	U	24.7	pg/g	24.7	58.8
19408-74-3	1,2,3,7,8,9-HxCDD	J	12.0	pg/g	3.70	58.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		304	pg/g	4.52	58.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9040	pg/g	13.2	118
51207-31-9	2,3,7,8-TCDF	J	7.84	pg/g	2.21	11.8
57117-41-6	1,2,3,7,8-PeCDF	J	2.87	pg/g	2.14	58.8
57117-31-4	2,3,4,7,8-PeCDF	J	4.73	pg/g	2.07	58.8
70648-26-9	1,2,3,4,7,8-HxCDF	U	5.3	pg/g	5.30	58.8
57117-44-9	1,2,3,6,7,8-HxCDF	J	4.61	pg/g	2.68	58.8
60851-34-5	2,3,4,6,7,8-HxCDF	J	5.25	pg/g	2.80	58.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.31	pg/g	4.31	58.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		61.8	pg/g	1.67	58.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	7.81	pg/g	7.81	58.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		143	pg/g	4.33	118

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1910	2350	pg/g	81.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		2030	2350	pg/g	86.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1870	2350	pg/g	79.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1510	2350	pg/g	64.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2240	2350	pg/g	95.2	(23%-140%)
13C-OCDD		4510	4710	pg/g	95.8	(17%-157%)
13C-2,3,7,8-TCDF		2000	2350	pg/g	84.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1890	2350	pg/g	80.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1990	2350	pg/g	84.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1840	2350	pg/g	78.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1820	2350	pg/g	77.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1890	2350	pg/g	80.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1660	2350	pg/g	70.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1920	2350	pg/g	81.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1830	2350	pg/g	77.9	(26%-138%)
37Cl-2,3,7,8-TCDD		236	235	pg/g	100	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176003	Date Collected: 05/29/2014 10:10	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 16.4
Client ID: SFRA-63		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 16:29	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-8		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.32 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	2.72	pg/g	0.910	9.07
40321-76-4	1,2,3,7,8-PeCDD	U	1.12	pg/g	1.12	45.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.25	pg/g	1.25	45.3
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.33	pg/g	1.33	45.3
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.37	pg/g	1.37	45.3
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	20.3	pg/g	3.06	45.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8050	pg/g	14.3	90.7
51207-31-9	2,3,7,8-TCDF	U	.887	pg/g	0.887	9.07
57117-41-6	1,2,3,7,8-PeCDF	U	.562	pg/g	0.562	45.3
57117-31-4	2,3,4,7,8-PeCDF	U	.522	pg/g	0.522	45.3
70648-26-9	1,2,3,4,7,8-HxCDF	U	.649	pg/g	0.649	45.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	.645	pg/g	0.645	45.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	.667	pg/g	0.667	45.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.01	pg/g	1.01	45.3
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.798	pg/g	0.624	45.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1	pg/g	1.00	45.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	2.92	pg/g	2.92	90.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1330	1810	pg/g	73.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1590	1810	pg/g	87.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1330	1810	pg/g	73.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1340	1810	pg/g	73.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1520	1810	pg/g	83.9	(23%-140%)
13C-OCDD		3040	3630	pg/g	83.7	(17%-157%)
13C-2,3,7,8-TCDF		1400	1810	pg/g	77.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1570	1810	pg/g	86.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1550	1810	pg/g	85.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1300	1810	pg/g	71.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1290	1810	pg/g	71.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1300	1810	pg/g	71.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1170	1810	pg/g	64.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1340	1810	pg/g	74.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1320	1810	pg/g	72.6	(26%-138%)
37Cl-2,3,7,8-TCDD		156	181	pg/g	86.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176004	Date Collected: 05/29/2014 10:50	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 17.3
Client ID: SFRA-64		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 17:17	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-9		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.18 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	5.86	pg/g	1.07	10.3
40321-76-4	1,2,3,7,8-PeCDD	U	1.55	pg/g	1.55	51.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.75	pg/g	1.75	51.3
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.85	pg/g	1.85	51.3
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.86	pg/g	1.86	51.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		69.5	pg/g	3.36	51.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6700	pg/g	19.5	103
51207-31-9	2,3,7,8-TCDF	U	1.06	pg/g	1.06	10.3
57117-41-6	1,2,3,7,8-PeCDF	U	.818	pg/g	0.818	51.3
57117-31-4	2,3,4,7,8-PeCDF	U	.759	pg/g	0.759	51.3
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.11	pg/g	1.11	51.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	.919	pg/g	0.919	51.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	.966	pg/g	0.966	51.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.45	pg/g	1.45	51.3
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	7.36	pg/g	0.779	51.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.24	pg/g	1.24	51.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	15.4	pg/g	5.39	103

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1730	2050	pg/g	84.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1940	2050	pg/g	94.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1650	2050	pg/g	80.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1720	2050	pg/g	84.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1880	2050	pg/g	91.7	(23%-140%)
13C-OCDD		3650	4100	pg/g	88.9	(17%-157%)
13C-2,3,7,8-TCDF		1840	2050	pg/g	89.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1970	2050	pg/g	96.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1950	2050	pg/g	94.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1630	2050	pg/g	79.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1640	2050	pg/g	80.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1660	2050	pg/g	80.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1470	2050	pg/g	71.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1680	2050	pg/g	82.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1570	2050	pg/g	76.4	(26%-138%)
37Cl-2,3,7,8-TCDD		200	205	pg/g	97.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176005	Date Collected: 05/29/2014 11:07	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 23
Client ID: SFRA-65		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 18:05	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-10		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.46 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		32.6	pg/g	1.11	8.90
40321-76-4	1,2,3,7,8-PeCDD	U	1.74	pg/g	1.74	44.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.38	pg/g	2.38	44.5
57653-85-7	1,2,3,6,7,8-HxCDD	U	4.38	pg/g	4.38	44.5
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.49	pg/g	2.49	44.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		186	pg/g	6.24	44.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		32700	pg/g	15.7	89.0
51207-31-9	2,3,7,8-TCDF	U	1.05	pg/g	1.05	8.90
57117-41-6	1,2,3,7,8-PeCDF	U	.722	pg/g	0.722	44.5
57117-31-4	2,3,4,7,8-PeCDF	U	.724	pg/g	0.724	44.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.51	pg/g	1.51	44.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.43	pg/g	1.43	44.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.43	pg/g	1.43	44.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.22	pg/g	2.22	44.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	9.79	pg/g	1.85	44.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.99	pg/g	2.99	44.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	31.1	pg/g	4.45	89.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1510	1780	pg/g	84.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1690	1780	pg/g	94.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1510	1780	pg/g	84.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1510	1780	pg/g	84.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1700	1780	pg/g	95.6	(23%-140%)
13C-OCDD		3750	3560	pg/g	105	(17%-157%)
13C-2,3,7,8-TCDF		1610	1780	pg/g	90.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1730	1780	pg/g	97.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1740	1780	pg/g	97.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1500	1780	pg/g	84.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1450	1780	pg/g	81.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1540	1780	pg/g	86.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1330	1780	pg/g	74.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1560	1780	pg/g	87.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1470	1780	pg/g	82.5	(26%-138%)
37Cl-2,3,7,8-TCDD		168	178	pg/g	94.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176006	Date Collected: 05/29/2014 11:26	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 21.6
Client ID: SFRA-66		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 18:53	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-11		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		238	pg/g	2.23	11.8
40321-76-4	1,2,3,7,8-PeCDD	U	2.88	pg/g	2.88	59.1
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.43	pg/g	3.00	59.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	13.4	pg/g	2.83	59.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	5.81	pg/g	3.09	59.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		363	pg/g	6.73	59.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		19300	pg/g	23.0	118
51207-31-9	2,3,7,8-TCDF	J	2.55	pg/g	2.13	11.8
57117-41-6	1,2,3,7,8-PeCDF	U	1.44	pg/g	1.44	59.1
57117-31-4	2,3,4,7,8-PeCDF	U	1.42	pg/g	1.42	59.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.43	pg/g	3.43	59.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.02	pg/g	2.02	59.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.43	pg/g	2.43	59.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.28	pg/g	3.28	59.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	51.9	pg/g	1.95	59.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.73	pg/g	3.07	59.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		161	pg/g	5.22	118

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1950	2360	pg/g	82.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2230	2360	pg/g	94.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1950	2360	pg/g	82.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2020	2360	pg/g	85.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2190	2360	pg/g	92.6	(23%-140%)
13C-OCDD		4540	4720	pg/g	96.0	(17%-157%)
13C-2,3,7,8-TCDF		2140	2360	pg/g	90.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		2320	2360	pg/g	98.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2240	2360	pg/g	95.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1910	2360	pg/g	81.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1930	2360	pg/g	81.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1970	2360	pg/g	83.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1740	2360	pg/g	73.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1970	2360	pg/g	83.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1880	2360	pg/g	79.7	(26%-138%)
37Cl-2,3,7,8-TCDD		228	236	pg/g	96.6	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176007	Date Collected: 05/29/2014 11:40	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 19.4
Client ID: SFRA-67		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 19:41	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-12		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	3.15	pg/g	3.15	10.4
40321-76-4	1,2,3,7,8-PeCDD	U	1.69	pg/g	1.69	52.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.75	pg/g	1.75	52.1
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.8	pg/g	1.80	52.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.89	pg/g	1.89	52.1
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	23.0	pg/g	3.73	52.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1900	pg/g	15.1	104
51207-31-9	2,3,7,8-TCDF	U	.915	pg/g	0.915	10.4
57117-41-6	1,2,3,7,8-PeCDF	U	.75	pg/g	0.750	52.1
57117-31-4	2,3,4,7,8-PeCDF	U	.761	pg/g	0.761	52.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	.803	pg/g	0.803	52.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	.767	pg/g	0.767	52.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	.786	pg/g	0.786	52.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.19	pg/g	1.19	52.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.892	pg/g	0.892	52.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.37	pg/g	1.37	52.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	4.59	pg/g	4.59	104

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1710	2080	pg/g	82.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1890	2080	pg/g	90.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1720	2080	pg/g	82.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1790	2080	pg/g	86.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1860	2080	pg/g	89.3	(23%-140%)
13C-OCDD		3550	4170	pg/g	85.2	(17%-157%)
13C-2,3,7,8-TCDF		1980	2080	pg/g	94.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		2000	2080	pg/g	95.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1910	2080	pg/g	91.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1730	2080	pg/g	82.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1710	2080	pg/g	82.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1770	2080	pg/g	84.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1550	2080	pg/g	74.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1760	2080	pg/g	84.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1630	2080	pg/g	78.2	(26%-138%)
37Cl-2,3,7,8-TCDD		194	208	pg/g	92.9	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176008	Date Collected: 05/29/2014 12:00	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 22.7
Client ID: SFRA-68		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 20:30	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_3-13		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		141	pg/g	1.72	12.1
40321-76-4	1,2,3,7,8-PeCDD	U	2.83	pg/g	2.83	60.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.14	pg/g	3.14	60.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	9.53	pg/g	3.31	60.4
19408-74-3	1,2,3,7,8,9-HxCDD	J	5.59	pg/g	3.43	60.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		271	pg/g	7.23	60.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8220	pg/g	23.0	121
51207-31-9	2,3,7,8-TCDF	U	2.59	pg/g	2.59	12.1
57117-41-6	1,2,3,7,8-PeCDF	J	1.84	pg/g	1.76	60.4
57117-31-4	2,3,4,7,8-PeCDF	U	1.68	pg/g	1.68	60.4
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.85	pg/g	2.85	60.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.9	pg/g	2.90	60.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.83	pg/g	2.83	60.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.21	pg/g	4.21	60.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	31.5	pg/g	2.08	60.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3.48	pg/g	3.48	60.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	99.6	pg/g	6.63	121

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2030	2420	pg/g	84.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		2220	2420	pg/g	91.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1910	2420	pg/g	79.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1960	2420	pg/g	81.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2110	2420	pg/g	87.3	(23%-140%)
13C-OCDD		4240	4840	pg/g	87.7	(17%-157%)
13C-2,3,7,8-TCDF		2180	2420	pg/g	90.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		2280	2420	pg/g	94.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2260	2420	pg/g	93.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1930	2420	pg/g	80.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2420	pg/g	79.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1990	2420	pg/g	82.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1770	2420	pg/g	73.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2030	2420	pg/g	84.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1870	2420	pg/g	77.3	(26%-138%)
37Cl-2,3,7,8-TCDD		230	242	pg/g	95.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176009	Date Collected: 05/29/2014 12:35	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 19.1
Client ID: SFRA-69		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 23:02	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_4-2		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	1.25	pg/g	1.25	11.4
40321-76-4	1,2,3,7,8-PeCDD	U	1.75	pg/g	1.75	57.2
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.36	pg/g	2.36	57.2
57653-85-7	1,2,3,6,7,8-HxCDD	U	2.31	pg/g	2.31	57.2
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.47	pg/g	2.47	57.2
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	20.8	pg/g	4.17	57.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		3360	pg/g	22.2	114
51207-31-9	2,3,7,8-TCDF	U	1.15	pg/g	1.15	11.4
57117-41-6	1,2,3,7,8-PeCDF	U	.783	pg/g	0.783	57.2
57117-31-4	2,3,4,7,8-PeCDF	U	.753	pg/g	0.753	57.2
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.14	pg/g	1.14	57.2
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.13	pg/g	1.13	57.2
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.15	pg/g	1.15	57.2
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.85	pg/g	1.85	57.2
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	1.35	pg/g	1.35	57.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.03	pg/g	2.03	57.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	4.67	pg/g	4.67	114

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1880	2290	pg/g	82.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		1900	2290	pg/g	83.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1880	2290	pg/g	82.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2120	2290	pg/g	92.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2030	2290	pg/g	88.7	(23%-140%)
13C-OCDD		3750	4580	pg/g	81.8	(17%-157%)
13C-2,3,7,8-TCDF		2000	2290	pg/g	87.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		2030	2290	pg/g	88.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1930	2290	pg/g	84.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1890	2290	pg/g	82.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2020	2290	pg/g	88.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2040	2290	pg/g	89.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1720	2290	pg/g	75.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1710	2290	pg/g	74.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1750	2290	pg/g	76.3	(26%-138%)
37Cl-2,3,7,8-TCDD		214	229	pg/g	93.6	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176010	Date Collected: 05/29/2014 12:55	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 20.4
Client ID: SFRA-70		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/03/2014 23:50	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_4-3		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.43 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		89.1	pg/g	1.30	8.79
40321-76-4	1,2,3,7,8-PeCDD	U	1.9	pg/g	1.90	43.9
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.97	pg/g	2.97	43.9
57653-85-7	1,2,3,6,7,8-HxCDD	J	6.54	pg/g	2.95	43.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	3.53	pg/g	3.15	43.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		184	pg/g	5.82	43.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11100	pg/g	32.2	87.9
51207-31-9	2,3,7,8-TCDF	U	1.6	pg/g	1.60	8.79
57117-41-6	1,2,3,7,8-PeCDF	U	1.56	pg/g	1.56	43.9
57117-31-4	2,3,4,7,8-PeCDF	U	1.57	pg/g	1.57	43.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	1.65	pg/g	1.60	43.9
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.55	pg/g	1.55	43.9
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.61	pg/g	1.61	43.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.43	pg/g	2.43	43.9
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	23.6	pg/g	1.75	43.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.97	pg/g	2.97	43.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	64.1	pg/g	5.31	87.9

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1320	1760	pg/g	74.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1390	1760	pg/g	79.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1270	1760	pg/g	72.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1360	1760	pg/g	77.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1330	1760	pg/g	75.8	(23%-140%)
13C-OCDD		2720	3520	pg/g	77.2	(17%-157%)
13C-2,3,7,8-TCDF		1430	1760	pg/g	81.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1500	1760	pg/g	85.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1450	1760	pg/g	82.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1260	1760	pg/g	71.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1340	1760	pg/g	76.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1340	1760	pg/g	76.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1170	1760	pg/g	66.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1280	1760	pg/g	73.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1190	1760	pg/g	67.8	(26%-138%)
37Cl-2,3,7,8-TCDD		173	176	pg/g	98.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176011	Date Collected: 05/29/2014 13:13	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 20.6
Client ID: SFRA-71		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/04/2014 00:38	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_4-4		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.24 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	1.27	pg/g	1.27	10.2
40321-76-4	1,2,3,7,8-PeCDD	U	1.52	pg/g	1.52	50.8
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.21	pg/g	2.21	50.8
57653-85-7	1,2,3,6,7,8-HxCDD	U	2.26	pg/g	2.26	50.8
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.38	pg/g	2.38	50.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		84.3	pg/g	6.26	50.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10800	pg/g	26.2	102
51207-31-9	2,3,7,8-TCDF	U	1.32	pg/g	1.32	10.2
57117-41-6	1,2,3,7,8-PeCDF	U	.908	pg/g	0.908	50.8
57117-31-4	2,3,4,7,8-PeCDF	U	.888	pg/g	0.888	50.8
70648-26-9	1,2,3,4,7,8-HxCDF	U	.725	pg/g	0.725	50.8
57117-44-9	1,2,3,6,7,8-HxCDF	U	.668	pg/g	0.668	50.8
60851-34-5	2,3,4,6,7,8-HxCDF	U	.701	pg/g	0.701	50.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.13	pg/g	1.13	50.8
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.975	pg/g	0.975	50.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.58	pg/g	1.58	50.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	4.41	pg/g	4.41	102

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1580	2030	pg/g	78.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1700	2030	pg/g	83.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1560	2030	pg/g	77.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1740	2030	pg/g	85.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1770	2030	pg/g	86.9	(23%-140%)
13C-OCDD		3450	4060	pg/g	84.9	(17%-157%)
13C-2,3,7,8-TCDF		1740	2030	pg/g	85.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1810	2030	pg/g	89.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1810	2030	pg/g	89.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1630	2030	pg/g	80.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1720	2030	pg/g	84.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1680	2030	pg/g	82.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1510	2030	pg/g	74.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1690	2030	pg/g	83.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1520	2030	pg/g	74.7	(26%-138%)
37Cl-2,3,7,8-TCDD		177	203	pg/g	87.0	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176012	Date Collected: 05/29/2014 13:25	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 47
Client ID: SFRA-72		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/04/2014 01:26	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_4-5		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.18 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		573	pg/g	3.97	16.0
40321-76-4	1,2,3,7,8-PeCDD	J	9.06	pg/g	4.00	80.0
39227-28-6	1,2,3,4,7,8-HxCDD	QU	54.1	pg/g	54.1	80.0
57653-85-7	1,2,3,6,7,8-HxCDD	Q	964	pg/g	77.5	80.0
19408-74-3	1,2,3,7,8,9-HxCDD	Q	405	pg/g	68.2	80.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		9020	pg/g	17.1	80.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		52500	pg/g	36.5	160
51207-31-9	2,3,7,8-TCDF	J	12.2	pg/g	5.38	16.0
57117-41-6	1,2,3,7,8-PeCDF	J	6.15	pg/g	2.71	80.0
57117-31-4	2,3,4,7,8-PeCDF	J	19.7	pg/g	2.80	80.0
70648-26-9	1,2,3,4,7,8-HxCDF	Q	117	pg/g	15.9	80.0
57117-44-9	1,2,3,6,7,8-HxCDF	J	55.5	pg/g	10.3	80.0
60851-34-5	2,3,4,6,7,8-HxCDF		92.4	pg/g	11.2	80.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	17.3	pg/g	17.3	80.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1200	pg/g	8.32	80.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		116	pg/g	16.6	80.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2260	pg/g	14.4	160

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2340	3200	pg/g	73.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		2260	3200	pg/g	70.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1880	3200	pg/g	58.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1320	3200	pg/g	41.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		4360	3200	pg/g	136	(23%-140%)
13C-OCDD		9650	6400	pg/g	151	(17%-157%)
13C-2,3,7,8-TCDF		2570	3200	pg/g	80.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		2250	3200	pg/g	70.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		2260	3200	pg/g	70.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF	Q	2700	3200	pg/g	84.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		3120	3200	pg/g	97.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		3220	3200	pg/g	101	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2230	3200	pg/g	69.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		3590	3200	pg/g	112	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		3540	3200	pg/g	111	(26%-138%)
37Cl-2,3,7,8-TCDD		279	320	pg/g	87.2	(35%-197%)

Comments:

- J** Value is estimated
- Q** Quantitative Interference
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6176	Client: TETR001	Project: TETR00114
Lab Sample ID: 6176013	Date Collected: 05/29/2014 13:38	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 05/30/2014 10:40	%Moisture: 22.9
Client ID: SFRA-73		Prep Basis: Dry Weight
Batch ID: 26065	Method: EPA Method 1613B	
Run Date: 06/04/2014 02:15	Analyst: JTF	Instrument: HRP750
Data File: A02JUN14B_4-6		Dilution: 1
Prep Batch: 26063	Prep Method: SW846 3540C	
Prep Date: 30-MAY-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3090	pg/g	3.19	12.4
40321-76-4	1,2,3,7,8-PeCDD	U	4.57	pg/g	4.57	61.8
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.88	pg/g	5.88	61.8
57653-85-7	1,2,3,6,7,8-HxCDD		65.0	pg/g	7.49	61.8
19408-74-3	1,2,3,7,8,9-HxCDD	J	24.7	pg/g	7.07	61.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		896	pg/g	6.52	61.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14000	pg/g	24.5	124
51207-31-9	2,3,7,8-TCDF		18.9	pg/g	4.20	12.4
57117-41-6	1,2,3,7,8-PeCDF	U	2.92	pg/g	2.92	61.8
57117-31-4	2,3,4,7,8-PeCDF	J	4.18	pg/g	2.42	61.8
70648-26-9	1,2,3,4,7,8-HxCDF	J	7.56	pg/g	3.21	61.8
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.08	pg/g	3.31	61.8
60851-34-5	2,3,4,6,7,8-HxCDF	J	8.08	pg/g	3.26	61.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.72	pg/g	4.72	61.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		204	pg/g	3.36	61.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	13.1	pg/g	5.49	61.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		586	pg/g	7.27	124

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2020	2470	pg/g	81.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		2060	2470	pg/g	83.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1830	2470	pg/g	74.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1530	2470	pg/g	61.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2610	2470	pg/g	105	(23%-140%)
13C-OCDD		5120	4940	pg/g	104	(17%-157%)
13C-2,3,7,8-TCDF		2230	2470	pg/g	90.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1700	2470	pg/g	68.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1970	2470	pg/g	79.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2010	2470	pg/g	81.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1890	2470	pg/g	76.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2050	2470	pg/g	83.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1920	2470	pg/g	77.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2220	2470	pg/g	89.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2130	2470	pg/g	86.4	(26%-138%)
37Cl-2,3,7,8-TCDD		245	247	pg/g	99.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

June 09, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6191

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 03, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number (1):
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request
 CFA Work Order Number: 6191

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc. Phone #: 314 517 6798
 Project/Site Name: Strecker Forest Removal Action Fax #:
 Address: 20 Jamestown Farm Drive Florissant MO 63034
 Collected by: Rick Clayton Send Results To: dan.kimoth@charter.net

Sample ID <small>* For composites - indicate start and stop date/time</small>		*Date Collected <small>(mm-dd-yy)</small>	*Time Collected <small>(Military) (hhmm)</small>	QC Code <small>(2)</small>	Field Filtered <small>(3)</small>	Sample Matrix <small>(4)</small>	Total number of containers	Sample Analysis Requested (5) (Fill in the number of containers for each test)										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC		
								1	2	3	4	5	6	7	8	9	10			11	12
SFRA-74		5-30-14	955			soil	1	X													
SFRA-75		↓	1110			↓	1	X													

TAT Requested: Normal: Rush: Specify: 72 hr. (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Potential Dioxins / Furans

Sample Collection Time Zone
 Eastern Pacific
 Central Other
 Mountain

Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time
1 Dave Kimoth	6-2-14	1207
2		
3		

Sample Shipping and Delivery Details	
CFA PM: Cynde Larkins	Method of Shipment: Fedex
Date Shipped: 6-2-14	Airbill #: 8042 3157 0859
	Airbill #:

1.) Chain of Custody Number = Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only

Custom Seal Intact? YES NO

Cooler Temp: 5.0 C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6191
Shipping Company: Fed Ex	Date/Time Received: 03JUN14 0940

Suspected Hazard Information	Yes	NA	No	DOE Site Sample Packages	Yes	NA	No*
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>	Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>	Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 5.0°C
4 Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed:
6 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		If preservative added, Lot#: Sample IDs, containers affected:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			If preservative added, Lot#: Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: CP Date: 03JUN14

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6191**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26082
Clean Up Batch Number: 26081
Extraction Batch Number: 26080

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
6191001	SFRA-74
6191002	SFRA-75
12010581	Method Blank (MB)
12010582	Laboratory Control Sample (LCS)
12010583	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. 6191001 and 6191002.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP with the following exceptions. A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Sample Dilutions

Samples 6191001 (SFRA-74) and 6191002 (SFRA-75)- Batch 26082 were diluted due to the presence of over range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6191 CFA Work Order: 6191


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 09 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6191	Client: TETR001	Project: TETR00114
Lab Sample ID: 6191001	Date Collected: 05/30/2014 09:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/03/2014 09:40	%Moisture: 22.1
Client ID: SFRA-74		Prep Basis: Dry Weight
Batch ID: 26082	Method: EPA Method 1613B	
Run Date: 06/06/2014 13:21	Analyst: JTF	Instrument: HRP750
Data File: A06JUN14A-5		Dilution: 10
Prep Batch: 26080	Prep Method: SW846 3540C	
Prep Date: 04-JUN-14	Prep Aliquot: 1.12 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		12000	pg/g	12.7	115
40321-76-4	1,2,3,7,8-PeCDD	U	13.4	pg/g	13.4	573
39227-28-6	1,2,3,4,7,8-HxCDD	QU	22.8	pg/g	22.8	573
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	171	pg/g	32.3	573
19408-74-3	1,2,3,7,8,9-HxCDD	J	51.6	pg/g	28.9	573
35822-46-9	1,2,3,4,6,7,8-HpCDD		1260	pg/g	32.1	573
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13600	pg/g	117	1150
51207-31-9	2,3,7,8-TCDF	J	64.4	pg/g	22.8	115
57117-41-6	1,2,3,7,8-PeCDF	U	11.9	pg/g	11.9	573
57117-31-4	2,3,4,7,8-PeCDF	U	11.8	pg/g	11.8	573
70648-26-9	1,2,3,4,7,8-HxCDF	U	20.9	pg/g	20.9	573
57117-44-9	1,2,3,6,7,8-HxCDF	U	22	pg/g	22.0	573
60851-34-5	2,3,4,6,7,8-HxCDF	J	17.6	pg/g	13.2	573
72918-21-9	1,2,3,7,8,9-HxCDF	U	18.8	pg/g	18.8	573
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	330	pg/g	12.4	573
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	24.4	pg/g	24.4	573
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	602	pg/g	66.7	1150

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1720	2290	pg/g	74.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1870	2290	pg/g	81.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1730	2290	pg/g	75.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1320	2290	pg/g	57.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2020	2290	pg/g	88.1	(23%-140%)
13C-OCDD		3940	4580	pg/g	86.1	(17%-157%)
13C-2,3,7,8-TCDF		1840	2290	pg/g	80.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1900	2290	pg/g	82.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1910	2290	pg/g	83.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1710	2290	pg/g	74.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1730	2290	pg/g	75.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1730	2290	pg/g	75.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1640	2290	pg/g	71.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1850	2290	pg/g	80.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1910	2290	pg/g	83.4	(26%-138%)
37Cl-2,3,7,8-TCDD		250	229	pg/g	109	(35%-197%)

Comments:**J** Value is estimated**Q** Quantitative Interference**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6191	Client: TETR001	Project: TETR00114
Lab Sample ID: 6191002	Date Collected: 05/30/2014 11:10	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/03/2014 09:40	%Moisture: 20.2
Client ID: SFRA-75		Prep Basis: Dry Weight
Batch ID: 26082	Method: EPA Method 1613B	
Run Date: 06/06/2014 14:08	Analyst: JTF	Instrument: HRP750
Data File: A06JUN14A-6		Dilution: 5
Prep Batch: 26080	Prep Method: SW846 3540C	
Prep Date: 04-JUN-14	Prep Aliquot: 1.35 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4690	pg/g	3.77	46.4
40321-76-4	1,2,3,7,8-PeCDD	U	6.24	pg/g	6.24	232
39227-28-6	1,2,3,4,7,8-HxCDD	QU	10.5	pg/g	10.5	232
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	125	pg/g	22.5	232
19408-74-3	1,2,3,7,8,9-HxCDD	J	35.1	pg/g	16.1	232
35822-46-9	1,2,3,4,6,7,8-HpCDD		1300	pg/g	11.7	232
3268-87-9	1,2,3,4,6,7,8,9-OCDD		18800	pg/g	44.6	464
51207-31-9	2,3,7,8-TCDF	J	30.1	pg/g	9.45	46.4
57117-41-6	1,2,3,7,8-PeCDF	U	4.05	pg/g	4.05	232
57117-31-4	2,3,4,7,8-PeCDF	U	7.69	pg/g	7.69	232
70648-26-9	1,2,3,4,7,8-HxCDF	U	12.1	pg/g	12.1	232
57117-44-9	1,2,3,6,7,8-HxCDF	U	9.47	pg/g	9.47	232
60851-34-5	2,3,4,6,7,8-HxCDF	J	11.9	pg/g	7.35	232
72918-21-9	1,2,3,7,8,9-HxCDF	U	10.8	pg/g	10.8	232
67562-39-4	1,2,3,4,6,7,8-HpCDF		286	pg/g	5.68	232
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	20.4	pg/g	9.86	232
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1090	pg/g	15.8	464

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1530	1860	pg/g	82.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1620	1860	pg/g	87.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1430	1860	pg/g	76.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	842	1860	pg/g	45.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1750	1860	pg/g	94.0	(23%-140%)
13C-OCDD		3450	3710	pg/g	92.8	(17%-157%)
13C-2,3,7,8-TCDF		1590	1860	pg/g	85.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1660	1860	pg/g	89.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1650	1860	pg/g	89.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1450	1860	pg/g	78.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1380	1860	pg/g	74.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1470	1860	pg/g	79.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1370	1860	pg/g	74.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1550	1860	pg/g	83.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1630	1860	pg/g	87.5	(26%-138%)
37Cl-2,3,7,8-TCDD		192	186	pg/g	103	(35%-197%)

Comments:**J** Value is estimated**Q** Quantitative Interference**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6191

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010582	LCS for batch 26080	13C-2,3,7,8-TCDD		77.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		88.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		77.1	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		72.9	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		86.9	(22%-166%)
		13C-OCDD		81.5	(13%-199%)
		13C-2,3,7,8-TCDF		81.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		91.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		89.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		75.0	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		73.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		74.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		68.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		77.1	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		80.6	(20%-186%)
		37Cl-2,3,7,8-TCDD		92.7	(31%-191%)
12010583	LCSD for batch 26080	13C-2,3,7,8-TCDD		77.1	(20%-175%)
		13C-1,2,3,7,8-PeCDD		84.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.0	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		76.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		89.2	(22%-166%)
		13C-OCDD		86.8	(13%-199%)
		13C-2,3,7,8-TCDF		86.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		85.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.3	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		74.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.1	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		72.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		81.3	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		82.7	(20%-186%)
		37Cl-2,3,7,8-TCDD		91.1	(31%-191%)
12010581	MB for batch 26080	13C-2,3,7,8-TCDD		74.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		80.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		72.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		70.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		78.3	(23%-140%)
		13C-OCDD		70.6	(17%-157%)
		13C-2,3,7,8-TCDF		77.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		83.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		71.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		71.7	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		65.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		72.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		70.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		82.5	(35%-197%)
6191001	SFRA-74	13C-2,3,7,8-TCDD		74.9	D (25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6191

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6191001	SFRA-74	13C-1,2,3,7,8-PeCDD		81.7 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD	Q	75.4 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	57.5 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.1 D	(23%-140%)
		13C-OCDD		86.1 D	(17%-157%)
		13C-2,3,7,8-TCDF		80.2 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		82.7 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		83.4 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.7 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.5 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		75.3 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		71.6 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.9 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.4 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		109 D	(35%-197%)
6191002	SFRA-75	13C-2,3,7,8-TCDD		82.2 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.3 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD	Q	76.8 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	45.3 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.0 D	(23%-140%)
		13C-OCDD		92.8 D	(17%-157%)
		13C-2,3,7,8-TCDF		85.6 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.3 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.1 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.0 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		74.2 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.2 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		74.0 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.3 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		87.5 D	(26%-138%)
37Cl-2,3,7,8-TCDD		103 D	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6191

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26080

Matrix: SOLID

Lab Sample ID: 12010582

Instrument: HRP750

Analysis Date: 06/06/2014 10:47

Dilution: 1

Analyst: JTF

Prep Batch ID: 26080

Batch ID: 26082

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.3	107	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	104	104	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	101	101	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	107	107	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	110	110	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	102	102	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	217	108	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.7	98.7	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	100	100	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	101	101	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	102	102	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	101	101	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	102	102	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	109	109	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	99.7	99.7	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	98.1	98.1	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	198	99.1	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6191

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26080

Matrix: SOLID

Lab Sample ID: 12010583

Instrument: HRP750

Analysis Date: 06/06/2014 11:35

Dilution: 1

Analyst: JTF

Prep Batch ID: 26080

Batch ID: 26082

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.2	106	67-158	0.639	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	106	106	70-142	1.77	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	102	102	70-164	0.501	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	109	109	76-134	1.67	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	115	115	64-162	3.67	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	103	103	70-140	0.788	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	206	103	78-144	4.92	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.8	94.1	75-158	4.78	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	99.8	99.8	80-134	0.623	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	101	101	68-160	0.369	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	101	101	72-134	1.15	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	102	102	84-130	1.49	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	101	101	70-156	1.22	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	107	107	78-130	1.91	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	99.5	99.5	82-122	0.183	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	99.8	99.8	78-138	1.73	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	196	98.2	63-170	0.896	0-20

Method Blank Summary

SDG Number: 6191	Client: TETR001	Matrix: SOLID
Client ID: MB for batch 26080	Instrument ID: HRP750	Data File: A06JUN14A-4
Lab Sample ID: 12010581	Prep Date: 04-JUN-14	Analyzed: 06/06/14 12:23
Column:		

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26080	12010582	A06JUN14A-2	06/06/14	1047
02 LCSD for batch 26080	12010583	A06JUN14A-3	06/06/14	1135
03 SFRA-74	6191001	A06JUN14A-5	06/06/14	1321
04 SFRA-75	6191002	A06JUN14A-6	06/06/14	1408

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6191	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010581		Matrix: SOLID
Client Sample: QC for batch 26080		
Client ID: MB for batch 26080		Prep Basis: As Received
Batch ID: 26082	Method: EPA Method 1613B	
Run Date: 06/06/2014 12:23	Analyst: JTF	Instrument: HRP750
Data File: A06JUN14A-4		Dilution: 1
Prep Batch: 26080	Prep Method: SW846 3540C	
Prep Date: 04-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.0958	pg/g	0.0958	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.274	pg/g	0.274	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.318	pg/g	0.176	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.384	pg/g	0.384	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.332	pg/g	0.332	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.590	pg/g	0.218	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	3.35	pg/g	0.394	10.0
51207-31-9	2,3,7,8-TCDF	U	.146	pg/g	0.146	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.314	pg/g	0.314	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.34	pg/g	0.340	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.352	pg/g	0.187	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.304	pg/g	0.304	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.286	pg/g	0.198	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.448	pg/g	0.296	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.394	pg/g	0.116	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.282	pg/g	0.185	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.692	pg/g	0.470	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		148	200	pg/g	74.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		162	200	pg/g	80.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		144	200	pg/g	72.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		142	200	pg/g	70.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		157	200	pg/g	78.3	(23%-140%)
13C-OCDD		282	400	pg/g	70.6	(17%-157%)
13C-2,3,7,8-TCDF		154	200	pg/g	77.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		175	200	pg/g	87.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		166	200	pg/g	83.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		143	200	pg/g	71.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		139	200	pg/g	69.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		143	200	pg/g	71.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		131	200	pg/g	65.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		146	200	pg/g	72.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		141	200	pg/g	70.6	(26%-138%)
37Cl-2,3,7,8-TCDD		16.5	20.0	pg/g	82.5	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6191	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010582		Matrix: SOLID
Client Sample: QC for batch 26080		
Client ID: LCS for batch 26080		Prep Basis: As Received
Batch ID: 26082	Method: EPA Method 1613B	
Run Date: 06/06/2014 10:47	Analyst: JTF	Instrument: HRP750
Data File: A06JUN14A-2		Dilution: 1
Prep Batch: 26080	Prep Method: SW846 3540C	
Prep Date: 04-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.3	pg/g	0.092	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.238	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		101	pg/g	0.364	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		107	pg/g	0.390	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		110	pg/g	0.402	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	0.396	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		217	pg/g	1.15	10.0
51207-31-9	2,3,7,8-TCDF		19.7	pg/g	0.115	1.00
57117-41-6	1,2,3,7,8-PeCDF		100	pg/g	0.260	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.258	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		102	pg/g	0.426	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.408	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		102	pg/g	0.438	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		109	pg/g	0.634	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		99.7	pg/g	0.306	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		98.1	pg/g	0.466	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		198	pg/g	0.978	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		155	200	pg/g	77.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		177	200	pg/g	88.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		154	200	pg/g	77.1	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		146	200	pg/g	72.9	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		174	200	pg/g	86.9	(22%-166%)
13C-OCDD		326	400	pg/g	81.5	(13%-199%)
13C-2,3,7,8-TCDF		164	200	pg/g	81.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		184	200	pg/g	91.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		178	200	pg/g	89.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		150	200	pg/g	75.0	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		147	200	pg/g	73.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		149	200	pg/g	74.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		138	200	pg/g	68.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		154	200	pg/g	77.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		161	200	pg/g	80.6	(20%-186%)
37Cl-2,3,7,8-TCDD		18.5	20.0	pg/g	92.7	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6191	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010583		Matrix: SOLID
Client Sample: QC for batch 26080		
Client ID: LCSD for batch 26080		Prep Basis: As Received
Batch ID: 26082	Method: EPA Method 1613B	
Run Date: 06/06/2014 11:35	Analyst: JTF	Instrument: HRP750
Data File: A06JUN14A-3		Dilution: 1
Prep Batch: 26080	Prep Method: SW846 3540C	
Prep Date: 04-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.2	pg/g	0.104	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.193	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		102	pg/g	0.370	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		109	pg/g	0.404	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		115	pg/g	0.412	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		103	pg/g	0.434	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		206	pg/g	1.21	10.0
51207-31-9	2,3,7,8-TCDF		18.8	pg/g	0.0794	1.00
57117-41-6	1,2,3,7,8-PeCDF		99.8	pg/g	0.222	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.232	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		101	pg/g	0.408	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		102	pg/g	0.406	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		101	pg/g	0.422	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		107	pg/g	0.600	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		99.5	pg/g	0.342	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.8	pg/g	0.498	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		196	pg/g	0.940	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		154	200	pg/g	77.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		169	200	pg/g	84.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	78.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		153	200	pg/g	76.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		178	200	pg/g	89.2	(22%-166%)
13C-OCDD		347	400	pg/g	86.8	(13%-199%)
13C-2,3,7,8-TCDF		173	200	pg/g	86.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		170	200	pg/g	85.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		171	200	pg/g	85.3	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		156	200	pg/g	77.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		149	200	pg/g	74.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		156	200	pg/g	78.1	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		146	200	pg/g	72.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		163	200	pg/g	81.3	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		165	200	pg/g	82.7	(20%-186%)
37Cl-2,3,7,8-TCDD		18.2	20.0	pg/g	91.1	(31%-191%)

Comments:



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Lxpg"33."4236"

"

O t0Fcxkf'Mlptqj'"

Ugci wni'Gpxkqpo gpvni'Vgej pqmji lgu.'lpeqtr qtcvgf'"

42'Lco gu'Vqy p'Hcto 'F tlxg'"

Hqtkucpv.'O kuqwk85256'"

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Tg<Utgengt'Hqtgu'Tgo qxcni'CeWqp'"

Y qtni'Qtf gt<8424'"

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F gct'O t0Mlptqj <

*****Ecr g'Hgct'Cpcn{ vlecn'NNE'EHc+'er r tgelevgu'vj g'qr r qt wplk{ 'q'r tqxkf g'vj g'gpenqugf 'cpcn{ vlecn't guwuu'ht' 'vj g'uco r rg'u+'y g'tgegkxgf qp'Lxpg'28."42360'vj ku'qtki lpcn'f cvc'tgr qt'vj cu'dggp'r tgr ct'gf 'cpf 't gxlgy gf 'lp'ceeqtf cpeg'y kj 'EHCai'ucpf ct'f 'qr gtc'vpi 'r tqegf wgu0'

*****Qw'r qnle{ 'ku'q'r tqxkf g'j ki j 's wcnk{ .r gtuqpcrk gf 'cpcn{ vlecn'lgt xlegu'q'gpcdn'g{ qw'q'o ggv{ qw'cpcn{ vlecn'p'ggf u'qp'wo g'gxgt { 'wo g0 Y g'tvuu'vj cv{ qw'y kn'lkpf 'gxgt { vj lpi 'lp'qtf gt 'bpf 'q' { qw'ucvukce'vqp0'ki' { qw'j cxg'cp { 's vguw'qpu.'r rncug'f q'p'qv'j guks'cv'q'ecni'o g'cv ; 32/9; 7/26430"

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Gpenquw'gu'

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number (1):
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number: **6202**

Client Name: **Tetra Tech Inc.** Phone #: **314 517 6798**

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Project/Site Name: **Stracker Forest Removal Action**
 Address: **20 Jamestown Farm Drive Florissant MO 63034**
 Collected by: **D. Kinuth** Send Results To: **davekinuth@charter.net**

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers	Preservative Type (6)	Comments
SFRA-76	6-5-14	1230			soil	1	X	Note: extra sample is required for sample specific QC
-77		1235				1		
-78		1240				1		
-79		1435				1		
-80		1447				1		
-81		1550				1		
End of shipment D. Kinuth 6-5-14								

TAT Requested: Normal: Rush: Specify: **72 hours** (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Dioxins/Furans

Sample Collection Time Zone: Eastern Pacific Central Other _____ Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<i>M. David Kinuth</i>	6-5-14	17:05	<i>W.K. CFA</i>	6 JUN 14	10:25

CFA PM: **Cynde Larkins**
 Method of Shipment: **Fedex** Date Shipped: **6-5-15**
 Airbill #: **8042 357 0815**

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Faecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO
 Cooler Temp:
9.4 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 0202
Shipping Company: Fed Ex	Date/Time Received: 06JUN14 0945

Suspected Hazard Information	Yes	NA	No	DOE Site Sample Packages	Yes	NA	No*
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>	Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>	Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Click Applicable: spilt broken damaged container leaking container other (describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 9.4°
4	Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CF** Date: **06JUN14**

Subject: RE: CFA TETR receipt 6-JUN-14
From: Dave Kinroth <davekinroth@charter.net>
Date: 6/6/2014 1:20 PM
To: Cynde Larkins <cynde.larkins@cfanalytical.com>

Please go ahead and run these samples. Temperature is not an issue for us on any of this material.

Thanks!

Dave

G. David Kinroth, CHMM
Regional Manager
EPA Reg. 7 START Haz. Waste Specialist
Seagull Environmental Technologies, Inc.
Woman-Owned, 8(a) Firm
Phone/Fax: (314) 395-3157
Mobile: (314) 517-6798
Emails: dkinroth@seagullenvirotech.com
davekinroth@charter.net

On Fri, Jun 6, 2014 at 11:06 AM, Cynde Larkins wrote:

Mr. Kinroth,

The samples arrived at CFA today in good condition but out of temperature. They were at 9.4°C upon receipt. Our policy is to get your permission to proceed with analysis with out of temperature samples.

Please advise.

Thank you,

--

Cynde Larkins
Project Manager Assistant
Cape Fear Analytical
3306 Kitty Hawk Road
Suite 120
Wilmington, NC 28405
(910) 795-0421

How was your customer experience? Customer service is a high priority for us, so we listen to what our customers have to say! Thank you for taking time to email us your thoughts and opinions at feedback@cfanalytical.com

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Rci g'6'qh'52

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High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6202**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26107
Clean Up Batch Number: 26106
Extraction Batch Number: 26105

Sample Analysis

The following samples were analyzed using the analytical protocol as established in Method 1613B:

Sample ID	Client ID
6202001	SFRA-76
6202002	SFRA-77
6202003	SFRA-78
6202004	SFRA-79
6202005	SFRA-80
6202006	SFRA-81
12010610	Method Blank (MB)
12010611	Laboratory Control Sample (LCS)
12010612	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 1g aliquot was used for extraction based on high concentrations of previous samples from this site. Batch 26107.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

VGVT223"Vgvtc"Vgej "GO "Kpeqtr qtcvgf
EnkpvUF I <8424"EHC"Y qtnlQtf gt<8424

The Qualifiers in this report are defined as follows:

, ""C"s wcrk{ "eqpvtqnl'cpcn{ vg'tgeqxgt { "ku'qwukf g'qh'ur gekhgf "ceegr vcpag'etkgtlc
, , ""Cpcn{ vg'ku'c'lwttqi cvg'eqo r qwpf
L""Xcwg"ku'guko cvgf
S ""S wcpvkcvg"kvgt hgt gpeg
W""Cpcn{ vg'y cu'cpcn{ | gf 'hqt."dw'pqvf gvgvfg "cdqvg'y g'ur gekhgf "f gvgvqp'iko k0

Review/Validation

Ecr g"Hgct"Cpcn{ vccn'tgs wkt gu'cni'cpcn{ vccn'f cvc"vq'dg'xgt hkgf "d{ "c"s wcrk hkgf "f cvc'tgxky gt0
Vj g'hqmy lpi "f cvc'xcn'f cvqt'xgt hkgf "y g'kphqto cvkqp'r t gupvfg "p'y ku'ecug'pcttcvkg<

Signature:



Name: Heather Patterson

Date: 11 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 6202001	Date Collected: 06/05/2014 12:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/06/2014 10:25	%Moisture: 21.9
Client ID: SFRA-76		Prep Basis: Dry Weight
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 18:39	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-5		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 1.11 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		941	pg/g	2.74	11.5
40321-76-4	1,2,3,7,8-PeCDD	U	2.65	pg/g	2.65	57.6
39227-28-6	1,2,3,4,7,8-HxCDD	U	6.09	pg/g	6.09	57.6
57653-85-7	1,2,3,6,7,8-HxCDD	U	12.5	pg/g	12.5	57.6
19408-74-3	1,2,3,7,8,9-HxCDD	U	6.55	pg/g	6.55	57.6
35822-46-9	1,2,3,4,6,7,8-HpCDD		172	pg/g	18.7	57.6
3268-87-9	1,2,3,4,6,7,8,9-OCDD		17400	pg/g	69.6	115
51207-31-9	2,3,7,8-TCDF	J	6.18	pg/g	3.37	11.5
57117-41-6	1,2,3,7,8-PeCDF	U	2.26	pg/g	2.26	57.6
57117-31-4	2,3,4,7,8-PeCDF	U	2.13	pg/g	2.13	57.6
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.02	pg/g	3.02	57.6
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.95	pg/g	2.95	57.6
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.04	pg/g	3.04	57.6
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.1	pg/g	5.10	57.6
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	31.0	pg/g	3.41	57.6
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	5.6	pg/g	5.60	57.6
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	58.1	pg/g	11.5	115

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1900	2310	pg/g	82.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2020	2310	pg/g	87.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1560	2310	pg/g	67.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1910	2310	pg/g	83.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1860	2310	pg/g	80.6	(23%-140%)
13C-OCDD		3670	4610	pg/g	79.7	(17%-157%)
13C-2,3,7,8-TCDF		1970	2310	pg/g	85.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		2110	2310	pg/g	91.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		2090	2310	pg/g	90.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1610	2310	pg/g	69.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2310	pg/g	83.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1810	2310	pg/g	78.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1620	2310	pg/g	70.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1910	2310	pg/g	82.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1740	2310	pg/g	75.5	(26%-138%)
37Cl-2,3,7,8-TCDD		212	231	pg/g	91.8	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 6202002	Date Collected: 06/05/2014 12:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/06/2014 10:25	%Moisture: 22.8
Client ID: SFRA-77		Prep Basis: Dry Weight
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 19:28	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-6		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 1.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1020	pg/g	3.78	12.1
40321-76-4	1,2,3,7,8-PeCDD	U	4.79	pg/g	4.79	60.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	8.93	pg/g	8.93	60.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	28.9	pg/g	8.37	60.5
19408-74-3	1,2,3,7,8,9-HxCDD	J	10.1	pg/g	9.15	60.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		485	pg/g	18.0	60.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		23800	pg/g	64.1	121
51207-31-9	2,3,7,8-TCDF	J	10.0	pg/g	3.00	12.1
57117-41-6	1,2,3,7,8-PeCDF	U	3.03	pg/g	3.03	60.5
57117-31-4	2,3,4,7,8-PeCDF	U	2.98	pg/g	2.98	60.5
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.44	pg/g	3.80	60.5
57117-44-9	1,2,3,6,7,8-HxCDF	J	4.96	pg/g	3.61	60.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.75	pg/g	3.75	60.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.93	pg/g	5.93	60.5
67562-39-4	1,2,3,4,6,7,8-HpCDF		98.4	pg/g	5.01	60.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	7.99	pg/g	7.99	60.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF		246	pg/g	21.1	121

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1720	2420	pg/g	71.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1910	2420	pg/g	78.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1580	2420	pg/g	65.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1800	2420	pg/g	74.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1960	2420	pg/g	81.1	(23%-140%)
13C-OCDD		4040	4840	pg/g	83.5	(17%-157%)
13C-2,3,7,8-TCDF		1840	2420	pg/g	76.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1940	2420	pg/g	80.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1890	2420	pg/g	78.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1620	2420	pg/g	67.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1780	2420	pg/g	73.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1710	2420	pg/g	70.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1560	2420	pg/g	64.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1810	2420	pg/g	75.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1800	2420	pg/g	74.2	(26%-138%)
37Cl-2,3,7,8-TCDD		224	242	pg/g	92.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 6202003	Date Collected: 06/05/2014 12:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/06/2014 10:25	%Moisture: 22.8
Client ID: SFRA-78		Prep Basis: Dry Weight
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 20:16	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-7		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 1.66 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2430	pg/g	2.48	7.81
40321-76-4	1,2,3,7,8-PeCDD	J	3.90	pg/g	2.86	39.0
39227-28-6	1,2,3,4,7,8-HxCDD	QU	9.23	pg/g	9.23	39.0
57653-85-7	1,2,3,6,7,8-HxCDD	Q	124	pg/g	9.96	39.0
19408-74-3	1,2,3,7,8,9-HxCDD	J	36.7	pg/g	10.2	39.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		821	pg/g	7.34	39.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8100	pg/g	31.1	78.1
51207-31-9	2,3,7,8-TCDF		14.7	pg/g	2.69	7.81
57117-41-6	1,2,3,7,8-PeCDF	J	2.45	pg/g	1.37	39.0
57117-31-4	2,3,4,7,8-PeCDF	J	5.93	pg/g	1.36	39.0
70648-26-9	1,2,3,4,7,8-HxCDF	J	8.82	pg/g	3.97	39.0
57117-44-9	1,2,3,6,7,8-HxCDF	J	5.78	pg/g	4.20	39.0
60851-34-5	2,3,4,6,7,8-HxCDF	J	13.0	pg/g	3.68	39.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.4	pg/g	5.40	39.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		194	pg/g	3.36	39.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	13.0	pg/g	5.81	39.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		353	pg/g	13.7	78.1

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1210	1560	pg/g	77.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1290	1560	pg/g	82.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1020	1560	pg/g	65.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	823	1560	pg/g	52.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1610	1560	pg/g	103	(23%-140%)
13C-OCDD		3300	3120	pg/g	106	(17%-157%)
13C-2,3,7,8-TCDF		1270	1560	pg/g	81.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1290	1560	pg/g	82.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1300	1560	pg/g	83.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1170	1560	pg/g	74.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1190	1560	pg/g	76.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1240	1560	pg/g	79.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1070	1560	pg/g	68.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1400	1560	pg/g	89.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1470	1560	pg/g	94.0	(26%-138%)
37Cl-2,3,7,8-TCDD		146	156	pg/g	93.3	(35%-197%)

Comments:

- J** Value is estimated
Q Quantitative Interference
U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 6202003	Date Collected: 06/05/2014 12:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/06/2014 10:25	%Moisture: 22.8
Client ID: SFRA-78		Prep Basis: Dry Weight
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/10/2014 12:00	Analyst: JTF	Instrument: HRP763
Data File: b10jun14b-4		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 1.66 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		14.3	pg/g	3.22	7.81

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 6202004	Date Collected: 06/05/2014 14:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/06/2014 10:25	%Moisture: 20
Client ID: SFRA-79		Prep Basis: Dry Weight
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 21:04	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-8		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1500	pg/g	3.18	11.1
40321-76-4	1,2,3,7,8-PeCDD	U	4.09	pg/g	4.09	55.3
39227-28-6	1,2,3,4,7,8-HxCDD	QU	11.7	pg/g	11.7	55.3
57653-85-7	1,2,3,6,7,8-HxCDD	Q	69.8	pg/g	13.9	55.3
19408-74-3	1,2,3,7,8,9-HxCDD	J	16.8	pg/g	13.6	55.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		449	pg/g	10.8	55.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5060	pg/g	31.8	111
51207-31-9	2,3,7,8-TCDF	J	9.31	pg/g	3.78	11.1
57117-41-6	1,2,3,7,8-PeCDF	U	4.2	pg/g	4.20	55.3
57117-31-4	2,3,4,7,8-PeCDF	U	4.09	pg/g	4.09	55.3
70648-26-9	1,2,3,4,7,8-HxCDF	U	5.28	pg/g	5.28	55.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	4.93	pg/g	4.93	55.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	4.84	pg/g	4.84	55.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.17	pg/g	5.17	55.3
67562-39-4	1,2,3,4,6,7,8-HpCDF		105	pg/g	3.23	55.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	7.54	pg/g	5.66	55.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF		145	pg/g	12.2	111

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1850	2210	pg/g	83.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1900	2210	pg/g	86.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1800	2210	pg/g	81.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1520	2210	pg/g	68.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2280	2210	pg/g	103	(23%-140%)
13C-OCDD		4570	4420	pg/g	103	(17%-157%)
13C-2,3,7,8-TCDF		1930	2210	pg/g	87.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1860	2210	pg/g	84.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1910	2210	pg/g	86.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1770	2210	pg/g	80.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1690	2210	pg/g	76.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2210	pg/g	86.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1740	2210	pg/g	78.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2050	2210	pg/g	92.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1970	2210	pg/g	89.1	(26%-138%)
37Cl-2,3,7,8-TCDD		213	221	pg/g	96.3	(35%-197%)

Comments:**J** Value is estimated**Q** Quantitative Interference**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 6202005	Date Collected: 06/05/2014 14:47	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/06/2014 10:25	%Moisture: 22.9
Client ID: SFRA-80		Prep Basis: Dry Weight
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 21:52	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-9		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 1.09 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		745	pg/g	3.19	11.9
40321-76-4	1,2,3,7,8-PeCDD	U	3.45	pg/g	3.45	59.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	7.73	pg/g	7.73	59.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	28.4	pg/g	7.78	59.5
19408-74-3	1,2,3,7,8,9-HxCDD	U	8.23	pg/g	8.23	59.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		391	pg/g	10.8	59.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8240	pg/g	44.3	119
51207-31-9	2,3,7,8-TCDF	J	4.21	pg/g	3.26	11.9
57117-41-6	1,2,3,7,8-PeCDF	U	2.69	pg/g	2.69	59.5
57117-31-4	2,3,4,7,8-PeCDF	U	2.55	pg/g	2.55	59.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	4.31	pg/g	4.31	59.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	3.81	pg/g	3.81	59.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	4.55	pg/g	4.55	59.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	6.38	pg/g	6.38	59.5
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.9	pg/g	4.16	59.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	7.26	pg/g	7.26	59.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF		189	pg/g	16.3	119

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1890	2380	pg/g	79.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1980	2380	pg/g	83.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1890	2380	pg/g	79.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1970	2380	pg/g	82.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2310	2380	pg/g	97.1	(23%-140%)
13C-OCDD		4310	4760	pg/g	90.6	(17%-157%)
13C-2,3,7,8-TCDF		1920	2380	pg/g	80.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	2380	pg/g	80.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1970	2380	pg/g	82.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1880	2380	pg/g	78.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1910	2380	pg/g	80.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1940	2380	pg/g	81.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1740	2380	pg/g	73.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2080	2380	pg/g	87.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1980	2380	pg/g	83.0	(26%-138%)
37Cl-2,3,7,8-TCDD		223	238	pg/g	93.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 6202006	Date Collected: 06/05/2014 15:50	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/06/2014 10:25	%Moisture: 22.4
Client ID: SFRA-81		Prep Basis: Dry Weight
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 22:40	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-10		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 1.52 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		240	pg/g	1.40	8.48
40321-76-4	1,2,3,7,8-PeCDD	U	1.76	pg/g	1.76	42.4
39227-28-6	1,2,3,4,7,8-HxCDD	QU	4.12	pg/g	4.12	42.4
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	13.2	pg/g	4.12	42.4
19408-74-3	1,2,3,7,8,9-HxCDD	U	4.37	pg/g	4.37	42.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		145	pg/g	5.92	42.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7740	pg/g	21.0	84.8
51207-31-9	2,3,7,8-TCDF	J	5.17	pg/g	2.20	8.48
57117-41-6	1,2,3,7,8-PeCDF	J	3.80	pg/g	1.08	42.4
57117-31-4	2,3,4,7,8-PeCDF	U	1.09	pg/g	1.09	42.4
70648-26-9	1,2,3,4,7,8-HxCDF	J	4.64	pg/g	1.88	42.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.93	pg/g	1.93	42.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.02	pg/g	2.02	42.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.03	pg/g	3.03	42.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	33.9	pg/g	1.73	42.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3	pg/g	3.00	42.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	55.1	pg/g	7.78	84.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1340	1700	pg/g	79.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1480	1700	pg/g	87.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1190	1700	pg/g	70.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1260	1700	pg/g	74.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1460	1700	pg/g	86.0	(23%-140%)
13C-OCDD		2940	3390	pg/g	86.7	(17%-157%)
13C-2,3,7,8-TCDF		1340	1700	pg/g	79.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1480	1700	pg/g	87.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1470	1700	pg/g	86.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1210	1700	pg/g	71.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1270	1700	pg/g	74.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1260	1700	pg/g	74.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1190	1700	pg/g	70.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1340	1700	pg/g	79.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1340	1700	pg/g	79.2	(26%-138%)
37Cl-2,3,7,8-TCDD		152	170	pg/g	89.8	(35%-197%)

Comments:

- J** Value is estimated
Q Quantitative Interference
U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6202

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010611	LCS for batch 26105	13C-2,3,7,8-TCDD		84.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		87.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		75.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		96.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		86.4	(22%-166%)
		13C-OCDD		75.5	(13%-199%)
		13C-2,3,7,8-TCDF		90.6	(22%-152%)
		13C-1,2,3,7,8-PeCDF		94.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		91.1	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		95.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		86.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		73.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		93.0	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		96.7	(31%-191%)
12010612	LCSD for batch 26105	13C-2,3,7,8-TCDD		65.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		64.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		63.3	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		78.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		62.9	(22%-166%)
		13C-OCDD		55.0	(13%-199%)
		13C-2,3,7,8-TCDF		76.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		70.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		68.0	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		66.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		72.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		61.0	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		68.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		58.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		86.0	(31%-191%)
12010610	MB for batch 26105	13C-2,3,7,8-TCDD		76.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		84.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		67.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		72.7	(23%-140%)
		13C-OCDD		62.0	(17%-157%)
		13C-2,3,7,8-TCDF		85.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		93.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		86.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		67.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		65.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		86.9	(35%-197%)
6202001	SFRA-76	13C-2,3,7,8-TCDD		82.5	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6202

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6202001	SFRA-76	13C-1,2,3,7,8-PeCDD		87.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		67.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.6	(23%-140%)
		13C-OCDD		79.7	(17%-157%)
		13C-2,3,7,8-TCDF		85.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		91.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		90.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		69.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		75.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		91.8	(35%-197%)
6202002	SFRA-77	13C-2,3,7,8-TCDD		71.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		65.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		74.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		81.1	(23%-140%)
		13C-OCDD		83.5	(17%-157%)
		13C-2,3,7,8-TCDF		76.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		78.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		67.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		70.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		64.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.2	(26%-138%)
37Cl-2,3,7,8-TCDD		92.7	(35%-197%)		
6202003	SFRA-78	13C-2,3,7,8-TCDD		77.8	(25%-164%)
		13C-1,2,3,7,8-PeCDD		82.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD	Q	65.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	52.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		103	(23%-140%)
		13C-OCDD		106	(17%-157%)
		13C-2,3,7,8-TCDF		81.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		82.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		83.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		68.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		89.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		94.0	(26%-138%)
37Cl-2,3,7,8-TCDD		93.3	(35%-197%)		
6202004	SFRA-79	13C-2,3,7,8-TCDD		83.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.0	(25%-181%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6202

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6202004	SFRA-79	13C-1,2,3,4,7,8-HxCDD	Q	81.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	68.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		103	(23%-140%)
		13C-OCDD		103	(17%-157%)
		13C-2,3,7,8-TCDF		87.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		92.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		96.3	(35%-197%)
		6202005	SFRA-80	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				83.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				79.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				82.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				97.1	(23%-140%)
13C-OCDD				90.6	(17%-157%)
13C-2,3,7,8-TCDF				80.9	(24%-169%)
13C-1,2,3,7,8-PeCDF				80.2	(24%-185%)
13C-2,3,4,7,8-PeCDF				82.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				78.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				80.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				81.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				73.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				87.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				83.0	(26%-138%)
37Cl-2,3,7,8-TCDD		93.7	(35%-197%)		
6202006	SFRA-81	13C-2,3,7,8-TCDD		79.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		70.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	74.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD	Q	86.0	(23%-140%)
		13C-OCDD		86.7	(17%-157%)
		13C-2,3,7,8-TCDF		79.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		71.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		74.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		74.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.2	(26%-138%)
37Cl-2,3,7,8-TCDD		89.8	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6202

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits
Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6202

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26105

Matrix: SOLID

Lab Sample ID: 12010611

Instrument: HRP750

Analysis Date: 06/09/2014 16:16

Dilution: 1

Analyst: JTF

Prep Batch ID: 26105

Batch ID: 26107

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.6	103	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	102	102	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	100	100	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	101	101	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	95.0	95	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	96.2	96.2	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	210	105	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.4	91.9	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	94.1	94.1	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	97.4	97.4	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	96.6	96.6	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	97.7	97.7	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	99.6	99.6	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	102	102	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	91.8	91.8	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	96.7	96.7	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	194	97	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6202

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26105

Matrix: SOLID

Lab Sample ID: 12010612

Instrument: HRP750

Analysis Date: 06/09/2014 17:03

Dilution: 1

Analyst: JTF

Prep Batch ID: 26105

Batch ID: 26107

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.9	105	67-158	1.56	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	104	104	70-142	1.62	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	98.2	98.2	70-164	1.86	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	107	107	76-134	5.20	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	105	105	64-162	9.71	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	95.7	95.7	70-140	0.479	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	208	104	78-144	0.997	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.7	93.4	75-158	1.65	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	95.5	95.5	80-134	1.43	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	98.3	98.3	68-160	0.881	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	103	103	72-134	5.97	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	98.4	98.4	84-130	0.744	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	99.8	99.8	70-156	0.225	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	107	107	78-130	4.83	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	98.3	98.3	82-122	6.86	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	101	101	78-138	4.80	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	211	106	63-170	8.38	0-20

Method Blank Summary

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SDG Number: 6202
Client ID: MB for batch 26105
Lab Sample ID: 12010610
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 06-JUN-14

Matrix: SOLID
Data File: A09JUN14B-4
Analyzed: 06/09/14 17:51

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26105	12010611	A09JUN14B-2	06/09/14	1616
02 LCSD for batch 26105	12010612	A09JUN14B-3	06/09/14	1703
03 SFRA-76	6202001	A09JUN14B-5	06/09/14	1839
04 SFRA-77	6202002	A09JUN14B-6	06/09/14	1928
05 SFRA-78	6202003	A09JUN14B-7	06/09/14	2016
06 SFRA-79	6202004	A09JUN14B-8	06/09/14	2104
07 SFRA-80	6202005	A09JUN14B-9	06/09/14	2152
08 SFRA-81	6202006	A09JUN14B-10	06/09/14	2240
09 SFRA-78	6202003	b10jun14b-4	06/10/14	1200

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010610		Matrix: SOLID
Client Sample: QC for batch 26105		
Client ID: MB for batch 26105		Prep Basis: As Received
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 17:51	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-4		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.15	pg/g	0.150	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.284	pg/g	0.180	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.338	pg/g	0.338	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.342	pg/g	0.342	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.36	pg/g	0.360	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.684	pg/g	0.684	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	1.41	pg/g	0.832	10.0
51207-31-9	2,3,7,8-TCDF	U	.162	pg/g	0.162	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.226	pg/g	0.171	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.165	pg/g	0.165	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.298	pg/g	0.298	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.304	pg/g	0.304	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.342	pg/g	0.342	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.556	pg/g	0.556	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.26	pg/g	0.260	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.392	pg/g	0.392	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.866	pg/g	0.866	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		152	200	pg/g	76.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		169	200	pg/g	84.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		134	200	pg/g	67.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		178	200	pg/g	89.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		145	200	pg/g	72.7	(23%-140%)
13C-OCDD		248	400	pg/g	62.0	(17%-157%)
13C-2,3,7,8-TCDF		172	200	pg/g	85.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		186	200	pg/g	93.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		177	200	pg/g	88.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		144	200	pg/g	72.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		173	200	pg/g	86.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		157	200	pg/g	78.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		135	200	pg/g	67.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		157	200	pg/g	78.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		132	200	pg/g	65.8	(26%-138%)
37Cl-2,3,7,8-TCDD		17.4	20.0	pg/g	86.9	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010611		Matrix: SOLID
Client Sample: QC for batch 26105		
Client ID: LCS for batch 26105		Prep Basis: As Received
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 16:16	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-2		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.6	pg/g	0.246	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.664	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		100	pg/g	1.26	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		101	pg/g	1.28	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		95.0	pg/g	1.34	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.2	pg/g	1.78	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		210	pg/g	4.36	10.0
51207-31-9	2,3,7,8-TCDF		18.4	pg/g	0.274	1.00
57117-41-6	1,2,3,7,8-PeCDF		94.1	pg/g	0.554	5.00
57117-31-4	2,3,4,7,8-PeCDF		97.4	pg/g	0.554	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		96.6	pg/g	1.48	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		97.7	pg/g	1.41	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		99.6	pg/g	1.48	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		102	pg/g	2.50	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		91.8	pg/g	1.24	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.7	pg/g	2.26	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		194	pg/g	3.10	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		169	200	pg/g	84.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		175	200	pg/g	87.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		150	200	pg/g	75.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		192	200	pg/g	96.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		173	200	pg/g	86.4	(22%-166%)
13C-OCDD		302	400	pg/g	75.5	(13%-199%)
13C-2,3,7,8-TCDF		181	200	pg/g	90.6	(22%-152%)
13C-1,2,3,7,8-PeCDF		190	200	pg/g	94.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		182	200	pg/g	91.1	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		160	200	pg/g	80.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		190	200	pg/g	95.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		172	200	pg/g	86.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		146	200	pg/g	73.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		186	200	pg/g	93.0	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		158	200	pg/g	79.2	(20%-186%)
37Cl-2,3,7,8-TCDD		19.3	20.0	pg/g	96.7	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6202	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010612		Matrix: SOLID
Client Sample: QC for batch 26105		
Client ID: LCSDD for batch 26105		Prep Basis: As Received
Batch ID: 26107	Method: EPA Method 1613B	
Run Date: 06/09/2014 17:03	Analyst: JTF	Instrument: HRP750
Data File: A09JUN14B-3		Dilution: 1
Prep Batch: 26105	Prep Method: SW846 3540C	
Prep Date: 06-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.282	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.886	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.2	pg/g	1.32	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		107	pg/g	1.24	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	1.35	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.7	pg/g	1.97	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		208	pg/g	4.38	10.0
51207-31-9	2,3,7,8-TCDF		18.7	pg/g	0.226	1.00
57117-41-6	1,2,3,7,8-PeCDF		95.5	pg/g	0.850	5.00
57117-31-4	2,3,4,7,8-PeCDF		98.3	pg/g	0.826	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		103	pg/g	1.60	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.4	pg/g	1.45	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		99.8	pg/g	1.60	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		107	pg/g	2.58	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		98.3	pg/g	1.71	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		101	pg/g	3.16	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		211	pg/g	3.08	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		132	200	pg/g	65.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		128	200	pg/g	64.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		127	200	pg/g	63.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		157	200	pg/g	78.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		126	200	pg/g	62.9	(22%-166%)
13C-OCDD		220	400	pg/g	55.0	(13%-199%)
13C-2,3,7,8-TCDF		153	200	pg/g	76.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		142	200	pg/g	70.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		136	200	pg/g	68.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		132	200	pg/g	66.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		161	200	pg/g	80.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		145	200	pg/g	72.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		122	200	pg/g	61.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		137	200	pg/g	68.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		117	200	pg/g	58.5	(20%-186%)
37Cl-2,3,7,8-TCDD		17.2	20.0	pg/g	86.0	(31%-191%)

Comments:

June 16, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6222

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 09, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

CFA Work Order Number: 6222

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc Phone #: 314 517 6798

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action
 Address: 20 Jamestown Farm Drive Florissant MO 63034
 Collected by: D. Kinroth Send Results To: davekinroth@charter.net

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers	Preservative Type ⁽⁶⁾	Comments
<u>SE RA - 02</u>	<u>6-6-14</u>	<u>1628</u>			<u>Soil</u>	<u>1</u>	<u>X</u>	Note: extra sample is required for sample specific QC
<u>- 03</u>		<u>1633</u>						
<u>- 04</u>		<u>1639</u>						
<u>- 05</u>		<u>1727</u>						
<u>- 06</u>		<u>1658</u>						
<u>- 07</u>		<u>1710</u>						
<u>- 08</u>		<u>1803</u>						
<u>- 09</u>		<u>1805</u>						
<u>END OF SHIPMENT</u>								

TAT Requested: Normal: Rush: Specify: 72 hour (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Dioxins/Furans

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>Dave Kinroth</u>	<u>6-6-14</u>	<u>1827</u>	<u>Cyndee Larkins</u>	<u>09 JUN 14</u>	<u>1020</u>

CFA PM: Cyndee Larkins
 Method of Shipment: Fedex Date Shipped: 6-6-14
 Airbill #: 8042 3157 0804
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate. If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
5.1 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR Work Order: 6222

Shipping Company: FedEx Date/Time Received: 09JUN14 1020

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) <u>5.1°C</u>
4 Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: CL Date: 09JUN14

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6222**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26124
Clean Up Batch Number: 26123
Extraction Batch Number: 26122

Sample Analysis

The following samples were analyzed using the analytical protocol as established in :

Sample ID	Client ID
6222001	SFRA-82
6222002	SFRA-83
6222003	SFRA-84
6222004	SFRA-85
6222005	SFRA-86
6222006	SFRA-87
6222007	SFRA-88
6222008	SFRA-89
12010628	Method Blank (MB)
12010629	Laboratory Control Sample (LCS)
12010630	Laboratory Control Sample Duplicate (LCSD)
12010631	6222001(SFRA-82) Matrix Spike (MS)
12010632	6222001(SFRA-82) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6222001 (SFRA-82)- Batch 26124 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

One MS recovery was above the acceptance limits due to matrix interference. 12010631 (SFRA-82) - Batch 26124.

Matrix Spike Duplicate (MSD) Recovery Statement

Two MSD recoveries for this SDG were above the acceptance limits due to matrix interference. 12010632 (SFRA-82) - Batch 26124.

MS/MSD Relative Percent Difference (RPD) Statement

One relative percent difference (RPD) between each MS and MSD was not within the required acceptance limits. 12010631 (SFRA-82) and 12010632 (SFRA-82) - Batch 26124.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26124.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

The following NCR was generated for this SDG: 644563 12010632 (SFRA-82)- Batch 26124.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6222 CFA Work Order: 6222


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 16 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222001	Date Collected: 06/06/2014 16:28	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 24.6
Client ID: SFRA-82		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/11/2014 21:07	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-4		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.12 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		677	pg/g	3.46	11.8
40321-76-4	1,2,3,7,8-PeCDD	J	5.12	pg/g	3.41	59.2
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.43	pg/g	5.43	59.2
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	38.4	pg/g	4.15	59.2
19408-74-3	1,2,3,7,8,9-HxCDD	J	15.0	pg/g	3.93	59.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		377	pg/g	5.54	59.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		15100	pg/g	10.8	118
51207-31-9	2,3,7,8-TCDF	J	9.19	pg/g	3.01	11.8
57117-41-6	1,2,3,7,8-PeCDF	J	11.2	pg/g	2.22	59.2
57117-31-4	2,3,4,7,8-PeCDF	U	5.95	pg/g	5.95	59.2
70648-26-9	1,2,3,4,7,8-HxCDF	J	15.3	pg/g	1.90	59.2
57117-44-9	1,2,3,6,7,8-HxCDF	J	8.06	pg/g	1.85	59.2
60851-34-5	2,3,4,6,7,8-HxCDF	J	6.92	pg/g	1.93	59.2
72918-21-9	1,2,3,7,8,9-HxCDF	J	6.97	pg/g	2.72	59.2
67562-39-4	1,2,3,4,6,7,8-HpCDF		86.6	pg/g	2.29	59.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	12.3	pg/g	3.89	59.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF		200	pg/g	5.00	118

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1960	2370	pg/g	82.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		2070	2370	pg/g	87.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1980	2370	pg/g	83.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1630	2370	pg/g	69.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2230	2370	pg/g	94.2	(23%-140%)
13C-OCDD		4380	4740	pg/g	92.5	(17%-157%)
13C-2,3,7,8-TCDF		2180	2370	pg/g	92.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		2080	2370	pg/g	87.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2170	2370	pg/g	91.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2030	2370	pg/g	85.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1970	2370	pg/g	83.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2040	2370	pg/g	86.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2030	2370	pg/g	85.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2080	2370	pg/g	88.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2160	2370	pg/g	91.2	(26%-138%)
37Cl-2,3,7,8-TCDD		239	237	pg/g	101	(35%-197%)

Comments:

J Value is estimated

Q Quantitative Interference

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222002	Date Collected: 06/06/2014 16:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 19.1
Client ID: SFRA-83		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/11/2014 21:54	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-5		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		887	pg/g	2.84	11.5
40321-76-4	1,2,3,7,8-PeCDD	J	4.67	pg/g	2.19	57.3
39227-28-6	1,2,3,4,7,8-HxCDD	J	4.08	pg/g	3.98	57.3
57653-85-7	1,2,3,6,7,8-HxCDD	Q	57.7	pg/g	5.82	57.3
19408-74-3	1,2,3,7,8,9-HxCDD	J	24.1	pg/g	5.11	57.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		502	pg/g	6.02	57.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11900	pg/g	8.18	115
51207-31-9	2,3,7,8-TCDF	J	6.11	pg/g	3.27	11.5
57117-41-6	1,2,3,7,8-PeCDF	J	4.01	pg/g	1.84	57.3
57117-31-4	2,3,4,7,8-PeCDF	J	3.07	pg/g	1.83	57.3
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.69	pg/g	2.04	57.3
57117-44-9	1,2,3,6,7,8-HxCDF	J	5.38	pg/g	2.06	57.3
60851-34-5	2,3,4,6,7,8-HxCDF	J	7.15	pg/g	2.09	57.3
72918-21-9	1,2,3,7,8,9-HxCDF	J	4.74	pg/g	3.25	57.3
67562-39-4	1,2,3,4,6,7,8-HpCDF		123	pg/g	2.17	57.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	10.4	pg/g	4.35	57.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF		220	pg/g	4.40	115

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2010	2290	pg/g	87.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		2080	2290	pg/g	90.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1940	2290	pg/g	84.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1310	2290	pg/g	57.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2260	2290	pg/g	98.9	(23%-140%)
13C-OCDD		4390	4580	pg/g	95.9	(17%-157%)
13C-2,3,7,8-TCDF		2160	2290	pg/g	94.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		2050	2290	pg/g	89.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		2170	2290	pg/g	94.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2010	2290	pg/g	87.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1860	2290	pg/g	81.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1990	2290	pg/g	86.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1960	2290	pg/g	85.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2060	2290	pg/g	90.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2170	2290	pg/g	94.8	(26%-138%)
37Cl-2,3,7,8-TCDD		245	229	pg/g	107	(35%-197%)

Comments:

J Value is estimated

Q Quantitative Interference

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222003	Date Collected: 06/06/2014 16:39	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 22
Client ID: SFRA-84		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/11/2014 22:42	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-6		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.09 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		421	pg/g	3.01	11.8
40321-76-4	1,2,3,7,8-PeCDD	J	3.81	pg/g	2.14	58.8
39227-28-6	1,2,3,4,7,8-HxCDD	U	6.11	pg/g	6.11	58.8
57653-85-7	1,2,3,6,7,8-HxCDD	J	24.4	pg/g	6.77	58.8
19408-74-3	1,2,3,7,8,9-HxCDD	J	11.6	pg/g	6.87	58.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		400	pg/g	6.35	58.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12400	pg/g	10.7	118
51207-31-9	2,3,7,8-TCDF		17.2	pg/g	4.21	11.8
57117-41-6	1,2,3,7,8-PeCDF	J	17.9	pg/g	1.92	58.8
57117-31-4	2,3,4,7,8-PeCDF	J	6.70	pg/g	1.79	58.8
70648-26-9	1,2,3,4,7,8-HxCDF	J	24.7	pg/g	2.33	58.8
57117-44-9	1,2,3,6,7,8-HxCDF	U	7.88	pg/g	7.88	58.8
60851-34-5	2,3,4,6,7,8-HxCDF	J	6.87	pg/g	2.54	58.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	8.98	pg/g	8.98	58.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		86.3	pg/g	2.17	58.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	16.0	pg/g	3.67	58.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		183	pg/g	8.04	118

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1990	2350	pg/g	84.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2140	2350	pg/g	91.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1960	2350	pg/g	83.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1780	2350	pg/g	75.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2190	2350	pg/g	93.1	(23%-140%)
13C-OCDD		4220	4700	pg/g	89.7	(17%-157%)
13C-2,3,7,8-TCDF		2140	2350	pg/g	90.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		2100	2350	pg/g	89.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2200	2350	pg/g	93.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2100	2350	pg/g	89.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1890	2350	pg/g	80.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2010	2350	pg/g	85.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1930	2350	pg/g	82.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2040	2350	pg/g	86.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2090	2350	pg/g	88.8	(26%-138%)
37Cl-2,3,7,8-TCDD		240	235	pg/g	102	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222003	Date Collected: 06/06/2014 16:39	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 22
Client ID: SFRA-84		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 13:02	Analyst: JTF	Instrument: HRP763
Data File: b12jun14a-5		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.09 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		16.1	pg/g	7.74	11.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222004	Date Collected: 06/06/2014 17:27	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 26.4
Client ID: SFRA-85		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/11/2014 23:30	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-7		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1250	pg/g	3.14	11.7
40321-76-4	1,2,3,7,8-PeCDD	U	3.94	pg/g	3.94	58.6
39227-28-6	1,2,3,4,7,8-HxCDD	U	6.56	pg/g	6.56	58.6
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	56.2	pg/g	13.1	58.6
19408-74-3	1,2,3,7,8,9-HxCDD	J	21.6	pg/g	9.23	58.6
35822-46-9	1,2,3,4,6,7,8-HpCDD		465	pg/g	6.02	58.6
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11500	pg/g	6.82	117
51207-31-9	2,3,7,8-TCDF		13.6	pg/g	3.40	11.7
57117-41-6	1,2,3,7,8-PeCDF	J	5.95	pg/g	1.51	58.6
57117-31-4	2,3,4,7,8-PeCDF	U	5.32	pg/g	5.32	58.6
70648-26-9	1,2,3,4,7,8-HxCDF	J	9.56	pg/g	1.73	58.6
57117-44-9	1,2,3,6,7,8-HxCDF	U	5.97	pg/g	5.97	58.6
60851-34-5	2,3,4,6,7,8-HxCDF	J	6.61	pg/g	1.71	58.6
72918-21-9	1,2,3,7,8,9-HxCDF	J	4.66	pg/g	2.69	58.6
67562-39-4	1,2,3,4,6,7,8-HpCDF		104	pg/g	1.61	58.6
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	8.97	pg/g	3.77	58.6
39001-02-0	1,2,3,4,6,7,8,9-OCDF		194	pg/g	4.05	117

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2080	2340	pg/g	88.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		2160	2340	pg/g	92.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2190	2340	pg/g	93.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	832	2340	pg/g	35.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2410	2340	pg/g	103	(23%-140%)
13C-OCDD		4600	4690	pg/g	98.1	(17%-157%)
13C-2,3,7,8-TCDF		2190	2340	pg/g	93.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		2100	2340	pg/g	89.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2230	2340	pg/g	95.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2090	2340	pg/g	89.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1950	2340	pg/g	83.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2090	2340	pg/g	89.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2030	2340	pg/g	86.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2150	2340	pg/g	91.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2290	2340	pg/g	97.9	(26%-138%)
37Cl-2,3,7,8-TCDD		248	234	pg/g	106	(35%-197%)

Comments:

- J** Value is estimated
Q Quantitative Interference
U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222004	Date Collected: 06/06/2014 17:27	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 26.4
Client ID: SFRA-85		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 13:22	Analyst: JTF	Instrument: HRP763
Data File: b12jun14a-6		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		12.4	pg/g	3.80	11.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222005	Date Collected: 06/06/2014 16:58	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 21.3
Client ID: SFRA-86		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 00:18	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-8		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.12 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		745	pg/g	2.61	11.3
40321-76-4	1,2,3,7,8-PeCDD	U	1.57	pg/g	1.57	56.7
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.11	pg/g	3.04	56.7
57653-85-7	1,2,3,6,7,8-HxCDD	J	9.82	pg/g	3.20	56.7
19408-74-3	1,2,3,7,8,9-HxCDD	J	6.10	pg/g	3.31	56.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		219	pg/g	3.58	56.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8390	pg/g	6.64	113
51207-31-9	2,3,7,8-TCDF	U	4.56	pg/g	4.56	11.3
57117-41-6	1,2,3,7,8-PeCDF	U	1.97	pg/g	1.97	56.7
57117-31-4	2,3,4,7,8-PeCDF	U	2.45	pg/g	2.45	56.7
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.43	pg/g	2.43	56.7
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.31	pg/g	2.31	56.7
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.49	pg/g	1.41	56.7
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.9	pg/g	1.90	56.7
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	35.3	pg/g	1.38	56.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	2.36	pg/g	2.11	56.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	112	pg/g	3.67	113

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2000	2270	pg/g	88.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		2330	2270	pg/g	103	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2050	2270	pg/g	90.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1840	2270	pg/g	81.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2080	2270	pg/g	91.8	(23%-140%)
13C-OCDD		4020	4540	pg/g	88.6	(17%-157%)
13C-2,3,7,8-TCDF		2150	2270	pg/g	94.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		2270	2270	pg/g	99.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		2360	2270	pg/g	104	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1950	2270	pg/g	86.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1810	2270	pg/g	80.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1960	2270	pg/g	86.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1900	2270	pg/g	83.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1890	2270	pg/g	83.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1960	2270	pg/g	86.6	(26%-138%)
37Cl-2,3,7,8-TCDD		243	227	pg/g	107	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222006	Date Collected: 06/06/2014 17:10	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 11.7
Client ID: SFRA-87		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 01:05	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-9		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		226	pg/g	2.20	10.5
40321-76-4	1,2,3,7,8-PeCDD	U	1.45	pg/g	1.45	52.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.99	pg/g	1.99	52.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	6.12	pg/g	1.95	52.4
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.09	pg/g	2.09	52.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		112	pg/g	3.84	52.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5020	pg/g	5.93	105
51207-31-9	2,3,7,8-TCDF	J	3.58	pg/g	2.02	10.5
57117-41-6	1,2,3,7,8-PeCDF	J	0.964	pg/g	0.855	52.4
57117-31-4	2,3,4,7,8-PeCDF	J	0.859	pg/g	0.759	52.4
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.19	pg/g	1.19	52.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.11	pg/g	1.11	52.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.15	pg/g	1.15	52.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.65	pg/g	1.65	52.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	16.4	pg/g	1.64	52.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.2	pg/g	2.20	52.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	38.6	pg/g	4.97	105

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1780	2100	pg/g	84.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1950	2100	pg/g	93.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1810	2100	pg/g	86.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1730	2100	pg/g	82.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1870	2100	pg/g	89.3	(23%-140%)
13C-OCDD		3620	4190	pg/g	86.3	(17%-157%)
13C-2,3,7,8-TCDF		1960	2100	pg/g	93.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1820	2100	pg/g	86.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		2070	2100	pg/g	98.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1710	2100	pg/g	81.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1640	2100	pg/g	78.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1810	2100	pg/g	86.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1730	2100	pg/g	82.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1700	2100	pg/g	81.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1880	2100	pg/g	89.8	(26%-138%)
37Cl-2,3,7,8-TCDD		217	210	pg/g	103	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222007	Date Collected: 06/06/2014 18:03	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 17.3
Client ID: SFRA-88		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 01:53	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-10		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.22 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		139	pg/g	2.06	9.91
40321-76-4	1,2,3,7,8-PeCDD	U	1.47	pg/g	1.47	49.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	4.38	pg/g	4.38	49.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	5.39	pg/g	4.10	49.5
19408-74-3	1,2,3,7,8,9-HxCDD	U	4.5	pg/g	4.50	49.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		161	pg/g	4.16	49.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7160	pg/g	7.93	99.1
51207-31-9	2,3,7,8-TCDF	U	2.26	pg/g	2.26	9.91
57117-41-6	1,2,3,7,8-PeCDF	J	1.76	pg/g	1.01	49.5
57117-31-4	2,3,4,7,8-PeCDF	U	.933	pg/g	0.933	49.5
70648-26-9	1,2,3,4,7,8-HxCDF	J	1.98	pg/g	1.53	49.5
57117-44-9	1,2,3,6,7,8-HxCDF	J	2.04	pg/g	1.48	49.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.51	pg/g	1.51	49.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.1	pg/g	2.10	49.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	21.0	pg/g	1.69	49.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.5	pg/g	2.50	49.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	76.8	pg/g	4.02	99.1

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1570	1980	pg/g	79.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1620	1980	pg/g	81.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1590	1980	pg/g	80.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1560	1980	pg/g	78.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1690	1980	pg/g	85.2	(23%-140%)
13C-OCDD		3330	3960	pg/g	84.0	(17%-157%)
13C-2,3,7,8-TCDF		1800	1980	pg/g	91.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1600	1980	pg/g	80.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1690	1980	pg/g	85.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1560	1980	pg/g	78.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1500	1980	pg/g	75.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1590	1980	pg/g	80.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1550	1980	pg/g	78.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1560	1980	pg/g	78.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1620	1980	pg/g	81.6	(26%-138%)
37Cl-2,3,7,8-TCDD		200	198	pg/g	101	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 6222008	Date Collected: 06/06/2014 18:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/09/2014 10:20	%Moisture: 29.9
Client ID: SFRA-89		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 02:41	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-11		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		595	pg/g	4.36	13.2
40321-76-4	1,2,3,7,8-PeCDD	U	2.82	pg/g	2.82	66.0
39227-28-6	1,2,3,4,7,8-HxCDD	QU	8.42	pg/g	8.42	66.0
57653-85-7	1,2,3,6,7,8-HxCDD	Q	69.9	pg/g	18.7	66.0
19408-74-3	1,2,3,7,8,9-HxCDD	QU	12.2	pg/g	12.2	66.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		358	pg/g	6.23	66.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14400	pg/g	12.1	132
51207-31-9	2,3,7,8-TCDF	J	9.13	pg/g	4.73	13.2
57117-41-6	1,2,3,7,8-PeCDF	J	2.90	pg/g	2.13	66.0
57117-31-4	2,3,4,7,8-PeCDF	J	6.36	pg/g	2.04	66.0
70648-26-9	1,2,3,4,7,8-HxCDF	J	5.94	pg/g	3.06	66.0
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.52	pg/g	2.80	66.0
60851-34-5	2,3,4,6,7,8-HxCDF	J	4.80	pg/g	3.19	66.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.36	pg/g	4.36	66.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		78.8	pg/g	2.69	66.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	4.86	pg/g	4.86	66.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	63.4	pg/g	7.55	132

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2210	2640	pg/g	83.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		2200	2640	pg/g	83.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	2300	2640	pg/g	87.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	753	2640	pg/g	28.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2610	2640	pg/g	99.0	(23%-140%)
13C-OCDD		5460	5280	pg/g	103	(17%-157%)
13C-2,3,7,8-TCDF		2360	2640	pg/g	89.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2200	2640	pg/g	83.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		2360	2640	pg/g	89.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2460	2640	pg/g	93.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2250	2640	pg/g	85.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2430	2640	pg/g	92.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1870	2640	pg/g	70.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2450	2640	pg/g	92.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2540	2640	pg/g	96.3	(26%-138%)
37Cl-2,3,7,8-TCDD		281	264	pg/g	106	(35%-197%)

Comments:

- J** Value is estimated
Q Quantitative Interference
U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6222

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010629	LCS for batch 26122	13C-2,3,7,8-TCDD		85.6	(20%-175%)
		13C-1,2,3,7,8-PeCDD		89.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		88.3	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		83.7	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		83.8	(22%-166%)
		13C-OCDD		75.1	(13%-199%)
		13C-2,3,7,8-TCDF		96.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		88.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		96.8	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		86.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		84.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		87.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		84.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		83.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		81.8	(20%-186%)
		37Cl-2,3,7,8-TCDD		102	(31%-191%)
12010630	LCSD for batch 26122	13C-2,3,7,8-TCDD		85.0	(20%-175%)
		13C-1,2,3,7,8-PeCDD		88.6	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		89.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.3	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		87.5	(22%-166%)
		13C-OCDD		78.2	(13%-199%)
		13C-2,3,7,8-TCDF		96.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		87.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		96.0	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		89.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		87.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		89.8	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		83.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		86.3	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		83.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		100	(31%-191%)
12010628	MB for batch 26122	13C-2,3,7,8-TCDD		78.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		81.8	(23%-140%)
		13C-OCDD		72.2	(17%-157%)
		13C-2,3,7,8-TCDF		86.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		82.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		79.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		91.1	(35%-197%)
6222001	SFRA-82	13C-2,3,7,8-TCDD		82.6	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6222

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6222001	SFRA-82	13C-1,2,3,7,8-PeCDD	Q	87.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		69.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.2	(23%-140%)
		13C-OCDD		92.5	(17%-157%)
		13C-2,3,7,8-TCDF		92.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		91.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		101	(35%-197%)
6222002	SFRA-83	13C-2,3,7,8-TCDD	Q	87.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		90.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		57.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		98.9	(23%-140%)
		13C-OCDD		95.9	(17%-157%)
		13C-2,3,7,8-TCDF		94.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		87.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		94.8	(26%-138%)
37Cl-2,3,7,8-TCDD	107	(35%-197%)			
6222003	SFRA-84	13C-2,3,7,8-TCDD		84.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		91.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.1	(23%-140%)
		13C-OCDD		89.7	(17%-157%)
		13C-2,3,7,8-TCDF		90.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		89.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		86.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		88.8	(26%-138%)
37Cl-2,3,7,8-TCDD	102	(35%-197%)			
6222004	SFRA-85	13C-2,3,7,8-TCDD		88.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		92.4	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6222

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6222004	SFRA-85	13C-1,2,3,4,7,8-HxCDD	Q	93.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		35.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		103	(23%-140%)
		13C-OCDD		98.1	(17%-157%)
		13C-2,3,7,8-TCDF		93.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		95.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		89.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		89.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		86.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		97.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		106	(35%-197%)
6222005	SFRA-86	13C-2,3,7,8-TCDD		88.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		103	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		90.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.8	(23%-140%)
		13C-OCDD		88.6	(17%-157%)
		13C-2,3,7,8-TCDF		94.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		99.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		104	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		86.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		86.6	(26%-138%)		
37Cl-2,3,7,8-TCDD		107	(35%-197%)		
6222006	SFRA-87	13C-2,3,7,8-TCDD		84.8	(25%-164%)
		13C-1,2,3,7,8-PeCDD		93.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.3	(23%-140%)
		13C-OCDD		86.3	(17%-157%)
		13C-2,3,7,8-TCDF		93.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		98.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		81.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		89.8	(26%-138%)		
37Cl-2,3,7,8-TCDD		103	(35%-197%)		
6222007	SFRA-88	13C-2,3,7,8-TCDD		79.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		81.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.1	(32%-141%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6222

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6222007	SFRA-88	13C-1,2,3,6,7,8-HxCDD		78.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.2	(23%-140%)
		13C-OCDD		84.0	(17%-157%)
		13C-2,3,7,8-TCDF		91.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		101	(35%-197%)
6222008	SFRA-89	13C-2,3,7,8-TCDD		83.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD	Q	87.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	28.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		99.0	(23%-140%)
		13C-OCDD		103	(17%-157%)
		13C-2,3,7,8-TCDF		89.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		93.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		85.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		92.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		92.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		96.3	(26%-138%)
37Cl-2,3,7,8-TCDD		106	(35%-197%)		
12010631	SFRA-82(6222001MS)	13C-2,3,7,8-TCDD		83.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		84.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	63.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.5	(23%-140%)
		13C-OCDD		89.1	(17%-157%)
		13C-2,3,7,8-TCDF		87.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		83.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.3	(26%-138%)
37Cl-2,3,7,8-TCDD		106	(35%-197%)		
12010632	SFRA-82(6222001MSD)	13C-2,3,7,8-TCDD		87.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		90.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		91.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	65.9	(28%-130%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6222

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010632	SFRA-82(6222001MSD)	13C-1,2,3,4,6,7,8-HpCDD		100	(23%-140%)
		13C-OCDD		98.1	(17%-157%)
		13C-2,3,7,8-TCDF		94.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		88.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		87.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		90.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		109	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6222

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26122

Matrix: SOLID

Lab Sample ID: 12010629

Instrument: HRP763

Analysis Date: 06/11/2014 18:44

Dilution: 1

Analyst: JTF

Prep Batch ID: 26122

Batch ID: 26124

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.1	106	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	99.2	99.2	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	99.3	99.3	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	98.5	98.5	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	101	101	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	192	95.8	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.9	99.5	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	99.6	99.6	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	98.1	98.1	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	99.1	99.1	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	98.6	98.6	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	99.2	99.2	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	105	105	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	96.6	96.6	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	99.7	99.7	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	196	98	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6222

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26122

Matrix: SOLID

Lab Sample ID: 12010630

Instrument: HRP763

Analysis Date: 06/11/2014 19:31

Dilution: 1

Analyst: JTF

Prep Batch ID: 26122

Batch ID: 26124

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.3	106	67-158	0.783	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	97.5	97.5	70-142	1.71	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	100	100	70-164	0.793	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	98.0	98	76-134	0.493	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	1.34	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	99.2	99.2	70-140	1.61	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	190	94.9	78-144	0.864	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	20.4	102	75-158	2.21	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	101	101	80-134	1.87	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	98.5	98.5	68-160	0.405	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	98.1	98.1	72-134	1.02	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	98.1	98.1	84-130	0.488	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	98.0	98	70-156	1.19	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	105	105	78-130	0.682	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	98.1	98.1	82-122	1.53	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	102	102	78-138	1.76	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	201	101	63-170	2.58	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6222

Sample Type: Matrix Spike

Client ID: SFRA-82(6222001MS)

Matrix: SOLID

Lab Sample ID: 12010631

%Moisture: 24.6

Instrument: HRP763

Analysis Date: 06/12/2014 08:29

Dilution: 1

Analyst: JTF

Prep Batch ID:26122

Batch ID: 26124

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	MS 2,3,7,8-TCDD	233		1020	145 *	70-130
40321-76-4	MS 1,2,3,7,8-PeCDD	1160	J	1140	97.7	70-130
39227-28-6	MS 1,2,3,4,7,8-HxCDD	1160	U	1140	98.2	70-130
57653-85-7	MS 1,2,3,6,7,8-HxCDD	1160	JQ	1200	99.5	70-130
19408-74-3	MS 1,2,3,7,8,9-HxCDD	1160	J	1380	117	70-130
35822-46-9	MS 1,2,3,4,6,7,8-HpCDD	1160		1590	105	70-130
3268-87-9	MS 1,2,3,4,6,7,8,9-OCDD	2330		18600	152 *	70-130
51207-31-9	MS 2,3,7,8-TCDF	233	J	231	95.2	70-130
57117-41-6	MS 1,2,3,7,8-PeCDF	1160	J	1140	96.8	70-130
57117-31-4	MS 2,3,4,7,8-PeCDF	1160	U	1120	95.9	70-130
70648-26-9	MS 1,2,3,4,7,8-HxCDF	1160	J	1130	95.6	70-130
57117-44-9	MS 1,2,3,6,7,8-HxCDF	1160	J	1140	97.1	70-130
60851-34-5	MS 2,3,4,6,7,8-HxCDF	1160	J	1100	94	70-130
72918-21-9	MS 1,2,3,7,8,9-HxCDF	1160	J	1190	101	70-130
67562-39-4	MS 1,2,3,4,6,7,8-HpCDF	1160		1220	97.4	70-130
55673-89-7	MS 1,2,3,4,7,8,9-HpCDF	1160	J	1140	97.3	70-130
39001-02-0	MS 1,2,3,4,6,7,8,9-OCDF	2330		2400	94.7	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6222
Client ID: SFRA-82(6222001MSD)
Lab Sample ID: 12010632
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 24.6
Analysis Date: 06/12/2014 09:20
Prep Batch ID: 26122
Batch ID: 26124
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	239		924	103	70-130	9.47	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1200	J	1190	99.4	70-130	4.46	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1200	U	1190	99.9	70-130	4.46	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1200	JQ	1260	102	70-130	4.86	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1200	J	1400	116	70-130	1.46	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1200		1510	94.5	70-130	5.70	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2390		15100	-1.15 *	70-130	21.1 *	0-20
51207-31-9	MSD 2,3,7,8-TCDF	239	J	243	98	70-130	5.29	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1200	J	1160	96.3	70-130	2.14	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1200	U	1130	94.4	70-130	1.11	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1200	J	1150	94.6	70-130	1.57	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1200	J	1130	94	70-130	0.553	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1200	J	1150	95.4	70-130	4.09	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1200	J	1230	103	70-130	3.77	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1200		1200	92.8	70-130	2.10	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1200	J	1150	95.6	70-130	0.868	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2390		2420	92.9	70-130	0.664	0-20

Method Blank Summary

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SDG Number: 6222
Client ID: MB for batch 26122
Lab Sample ID: 12010628
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 10-JUN-14

Matrix: SOLID
Data File: b11jun14b_2-3
Analyzed: 06/11/14 20:19

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26122	12010629	b11jun14b_2-1	06/11/14	1844
02 LCSD for batch 26122	12010630	b11jun14b_2-2	06/11/14	1931
03 SFRA-82	6222001	b11jun14b_2-4	06/11/14	2107
04 SFRA-83	6222002	b11jun14b_2-5	06/11/14	2154
05 SFRA-84	6222003	b11jun14b_2-6	06/11/14	2242
06 SFRA-85	6222004	b11jun14b_2-7	06/11/14	2330
07 SFRA-86	6222005	b11jun14b_2-8	06/12/14	0018
08 SFRA-87	6222006	b11jun14b_2-9	06/12/14	0105
09 SFRA-88	6222007	b11jun14b_2-10	06/12/14	0153
10 SFRA-89	6222008	b11jun14b_2-11	06/12/14	0241
11 SFRA-82(6222001MS)	12010631	b11jun14b_3-2	06/12/14	0829
12 SFRA-82(6222001MSD)	12010632	b11jun14b_3-3	06/12/14	0920
13 SFRA-84	6222003	b12jun14a-5	06/12/14	1302
14 SFRA-85	6222004	b12jun14a-6	06/12/14	1322

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010628		Matrix: SOLID
Client Sample: QC for batch 26122		
Client ID: MB for batch 26122		Prep Basis: As Received
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/11/2014 20:19	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-3		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.189	pg/g	0.189	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.196	pg/g	0.125	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.236	pg/g	0.236	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.23	pg/g	0.230	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.292	pg/g	0.246	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.392	pg/g	0.356	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.612	pg/g	0.612	10.0
51207-31-9	2,3,7,8-TCDF	U	.118	pg/g	0.118	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.354	pg/g	0.0746	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.21	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.338	pg/g	0.122	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.288	pg/g	0.288	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.222	pg/g	0.122	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.300	pg/g	0.169	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.264	pg/g	0.156	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.272	pg/g	0.272	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.494	pg/g	0.494	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		157	200	pg/g	78.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		166	200	pg/g	83.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		161	200	pg/g	80.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		159	200	pg/g	79.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		164	200	pg/g	81.8	(23%-140%)
13C-OCDD		289	400	pg/g	72.2	(17%-157%)
13C-2,3,7,8-TCDF		173	200	pg/g	86.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		165	200	pg/g	82.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		177	200	pg/g	88.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		160	200	pg/g	79.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		157	200	pg/g	78.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		164	200	pg/g	81.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		160	200	pg/g	79.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		156	200	pg/g	78.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		158	200	pg/g	78.9	(26%-138%)
37Cl-2,3,7,8-TCDD		18.2	20.0	pg/g	91.1	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010629		Matrix: SOLID
Client Sample: QC for batch 26122		
Client ID: LCS for batch 26122		Prep Basis: As Received
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/11/2014 18:44	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-1		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.1	pg/g	0.264	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.2	pg/g	0.220	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		99.3	pg/g	0.416	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.5	pg/g	0.422	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		101	pg/g	0.444	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	0.422	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	0.756	10.0
51207-31-9	2,3,7,8-TCDF		19.9	pg/g	0.157	1.00
57117-41-6	1,2,3,7,8-PeCDF		99.6	pg/g	0.214	5.00
57117-31-4	2,3,4,7,8-PeCDF		98.1	pg/g	0.197	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		99.1	pg/g	0.434	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.6	pg/g	0.410	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		99.2	pg/g	0.426	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		105	pg/g	0.626	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		96.6	pg/g	0.356	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.7	pg/g	0.608	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		196	pg/g	0.688	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		171	200	pg/g	85.6	(20%-175%)
13C-1,2,3,7,8-PeCDD		179	200	pg/g	89.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		177	200	pg/g	88.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		167	200	pg/g	83.7	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	83.8	(22%-166%)
13C-OCDD		300	400	pg/g	75.1	(13%-199%)
13C-2,3,7,8-TCDF		193	200	pg/g	96.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		176	200	pg/g	88.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		194	200	pg/g	96.8	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		173	200	pg/g	86.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		170	200	pg/g	84.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		175	200	pg/g	87.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		170	200	pg/g	84.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		168	200	pg/g	83.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		164	200	pg/g	81.8	(20%-186%)
37Cl-2,3,7,8-TCDD		20.4	20.0	pg/g	102	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010630		Matrix: SOLID
Client Sample: QC for batch 26122		
Client ID: LCSD for batch 26122		Prep Basis: As Received
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/11/2014 19:31	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_2-2		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.3	pg/g	0.258	1.00
40321-76-4	1,2,3,7,8-PeCDD		97.5	pg/g	0.236	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		100	pg/g	0.390	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.0	pg/g	0.392	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.414	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.2	pg/g	0.728	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		190	pg/g	0.990	10.0
51207-31-9	2,3,7,8-TCDF		20.4	pg/g	0.177	1.00
57117-41-6	1,2,3,7,8-PeCDF		101	pg/g	0.206	5.00
57117-31-4	2,3,4,7,8-PeCDF		98.5	pg/g	0.194	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		98.1	pg/g	0.450	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.1	pg/g	0.418	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		98.0	pg/g	0.468	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		105	pg/g	0.672	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		98.1	pg/g	0.410	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		102	pg/g	0.654	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		201	pg/g	1.03	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		170	200	pg/g	85.0	(20%-175%)
13C-1,2,3,7,8-PeCDD		177	200	pg/g	88.6	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		179	200	pg/g	89.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		171	200	pg/g	85.3	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		175	200	pg/g	87.5	(22%-166%)
13C-OCDD		313	400	pg/g	78.2	(13%-199%)
13C-2,3,7,8-TCDF		192	200	pg/g	96.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		175	200	pg/g	87.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		192	200	pg/g	96.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		180	200	pg/g	89.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		176	200	pg/g	87.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		180	200	pg/g	89.8	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		166	200	pg/g	83.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		173	200	pg/g	86.3	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		166	200	pg/g	83.1	(20%-186%)
37Cl-2,3,7,8-TCDD		20.0	20.0	pg/g	100	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010631	Date Collected: 06/06/2014 16:28	Matrix: SOLID
Client Sample: QC for batch 26122	Date Received: 06/09/2014 10:20	%Moisture: 24.6
Client ID: SFRA-82(6222001MS)		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 08:29	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_3-2		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.14 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1020	pg/g	2.86	11.6
40321-76-4	1,2,3,7,8-PeCDD		1140	pg/g	3.35	58.2
39227-28-6	1,2,3,4,7,8-HxCDD		1140	pg/g	5.84	58.2
57653-85-7	1,2,3,6,7,8-HxCDD	Q	1200	pg/g	7.59	58.2
19408-74-3	1,2,3,7,8,9-HxCDD		1380	pg/g	7.10	58.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		1590	pg/g	6.94	58.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		18600	pg/g	12.3	116
51207-31-9	2,3,7,8-TCDF		231	pg/g	2.93	11.6
57117-41-6	1,2,3,7,8-PeCDF		1140	pg/g	2.49	58.2
57117-31-4	2,3,4,7,8-PeCDF		1120	pg/g	2.47	58.2
70648-26-9	1,2,3,4,7,8-HxCDF		1130	pg/g	4.33	58.2
57117-44-9	1,2,3,6,7,8-HxCDF		1140	pg/g	4.17	58.2
60851-34-5	2,3,4,6,7,8-HxCDF		1100	pg/g	4.59	58.2
72918-21-9	1,2,3,7,8,9-HxCDF		1190	pg/g	6.40	58.2
67562-39-4	1,2,3,4,6,7,8-HpCDF		1220	pg/g	3.21	58.2
55673-89-7	1,2,3,4,7,8,9-HpCDF		1140	pg/g	5.80	58.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2400	pg/g	6.10	116

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1940	2330	pg/g	83.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1960	2330	pg/g	84.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1940	2330	pg/g	83.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1470	2330	pg/g	63.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2150	2330	pg/g	92.5	(23%-140%)
13C-OCDD		4150	4660	pg/g	89.1	(17%-157%)
13C-2,3,7,8-TCDF		2040	2330	pg/g	87.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1860	2330	pg/g	80.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1950	2330	pg/g	83.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1890	2330	pg/g	81.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1820	2330	pg/g	78.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1920	2330	pg/g	82.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1830	2330	pg/g	78.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1910	2330	pg/g	82.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1980	2330	pg/g	85.3	(26%-138%)
37Cl-2,3,7,8-TCDD		247	233	pg/g	106	(35%-197%)

Comments:

Q Quantitative Interference

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6222	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010632	Date Collected: 06/06/2014 16:28	Matrix: SOLID
Client Sample: QC for batch 26122	Date Received: 06/09/2014 10:20	%Moisture: 24.6
Client ID: SFRA-82(6222001MSD)		Prep Basis: Dry Weight
Batch ID: 26124	Method: EPA Method 1613B	
Run Date: 06/12/2014 09:20	Analyst: JTF	Instrument: HRP763
Data File: b11jun14b_3-3		Dilution: 1
Prep Batch: 26122	Prep Method: SW846 3540C	
Prep Date: 10-JUN-14	Prep Aliquot: 1.11 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		924	pg/g	3.16	12.0
40321-76-4	1,2,3,7,8-PeCDD		1190	pg/g	2.18	59.8
39227-28-6	1,2,3,4,7,8-HxCDD		1190	pg/g	3.75	59.8
57653-85-7	1,2,3,6,7,8-HxCDD	Q	1260	pg/g	4.71	59.8
19408-74-3	1,2,3,7,8,9-HxCDD		1400	pg/g	4.47	59.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		1510	pg/g	4.73	59.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		15100	pg/g	9.30	120
51207-31-9	2,3,7,8-TCDF		243	pg/g	3.16	12.0
57117-41-6	1,2,3,7,8-PeCDF		1160	pg/g	3.04	59.8
57117-31-4	2,3,4,7,8-PeCDF		1130	pg/g	2.84	59.8
70648-26-9	1,2,3,4,7,8-HxCDF		1150	pg/g	3.80	59.8
57117-44-9	1,2,3,6,7,8-HxCDF		1130	pg/g	3.78	59.8
60851-34-5	2,3,4,6,7,8-HxCDF		1150	pg/g	4.06	59.8
72918-21-9	1,2,3,7,8,9-HxCDF		1230	pg/g	6.19	59.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		1200	pg/g	2.41	59.8
55673-89-7	1,2,3,4,7,8,9-HpCDF		1150	pg/g	4.59	59.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2420	pg/g	6.55	120

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2100	2390	pg/g	87.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		2170	2390	pg/g	90.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2180	2390	pg/g	91.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1570	2390	pg/g	65.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2400	2390	pg/g	100	(23%-140%)
13C-OCDD		4690	4780	pg/g	98.1	(17%-157%)
13C-2,3,7,8-TCDF		2260	2390	pg/g	94.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2130	2390	pg/g	89.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		2240	2390	pg/g	93.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2120	2390	pg/g	88.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1930	2390	pg/g	80.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2080	2390	pg/g	86.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2000	2390	pg/g	83.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2090	2390	pg/g	87.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2170	2390	pg/g	90.8	(26%-138%)
37Cl-2,3,7,8-TCDD		260	239	pg/g	109	(35%-197%)

Comments:

Q Quantitative Interference

June 23, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6223

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 10, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of _____
 Project #: _____
 CFA Quote #: _____
 COC Number (1): _____
 PO Number: _____

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

CFA Work Order Number: **6223**

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Page 2 of 30

Client Name: Tetra Tech, Inc Phone #: 314-517-6778

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Project/Site Name: Stocker Forest Renewal Area Fax #: _____

Address: 20 Jamestown Farm DR Florissant Mo 63034

Collected by: R. Clifton D.K. Send Results To: dave K. Smith

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers	Sample Analysis Requested (5)										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC		
							1	2	3	4	5	6	7	8	9	10			11	12
SFRA-90	26-09-14	1545			S	1	X													
SFRA-91		1550			S	1	X													
SFRA-92		1605			S	1	X													
SFRA-93		1623			S	1	X													
SFRA-94		1618			S	1	X													
SFRA-95		1700			S	1	X													
SFRA-96		1702			S	1	X													
SFRA-97	↓	1705			S	1	X													

TAT Requested: Normal: _____ Rush: X Specify: 72 (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time Zone	Eastern	Pacific
Central	Other	_____
Mountain		

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>R. Clifton</u>	<u>6-9-14</u>	<u>1720</u>	<u>Cynde Larkins</u>	<u>10 JUN 14</u>	<u>1015</u>
1			CFA PM: <u>Cynde Larkins</u>	Method of Shipment: <u>Fed Ex</u>	Date Shipped: <u>6-9-14</u>
2			Airbill #: <u>8042 3157 0790</u>		
3			Airbill #: _____		

- 1.) Chain of Custody Number = Client Determined
- 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- 3.) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or- N - for sample was not field filtered.
- 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?	YES	NO
Cooler Temp:	<u>5.70 C</u>	

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6223
Shipping Company: Fed Ex	Date/Time Received: 10 JUN 14 1015

Suspected Hazard Information	Yes	NA	No	DOE Site Sample Packages	Yes	NA	No*
Shipped as DOT Hazardous?			✓	Screened <0.5 mR/hr?			✓
Samples identified as Foreign Soil?			✓	Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	✓			
3 Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other(describe) 5.7°C
4 Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed:
6 Samples requiring preservation have no residual chlorine?		✓		If preservative added, Lot#: Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	✓			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: **CL** Date: **10 JUN 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6223**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26130
Clean Up Batch Number: 26129
Extraction Batch Number: 26128

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6223001	SFRA-90
6223002	SFRA-91
6223003	SFRA-92
6223004	SFRA-93
6223005	SFRA-94
6223006	SFRA-95
6223007	SFRA-96
6223008	SFRA-97
12010636	Method Blank (MB)
12010637	Laboratory Control Sample (LCS)
12010638	Laboratory Control Sample Duplicate (LCSD)
12010639	6223001(SFRA-90) Matrix Spike (MS)
12010640	6223001(SFRA-90) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6223001 (SFRA-90)- Batch 26130 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

Two MS recoveries were above the acceptance limits due to matrix interference. 12010639 (SFRA-90) - Batch 26130.

Matrix Spike Duplicate (MSD) Recovery Statement

One MSD recovery for this SDG was not within the acceptance limits. The failure confirms in the MS and can be attributed to matrix interference. 12010640 (SFRA-90) - Batch 26130.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26130.

Sample Dilutions

Sample 6223006 (SFRA-95)- Batch 26130 was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6223 CFA Work Order: 6223

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- Q Quantitative Interference
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 23 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223001	Date Collected: 06/09/2014 15:45	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 22.5
Client ID: SFRA-90		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/12/2014 17:41	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_3-6		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		543	pg/g	1.54	12.6
40321-76-4	1,2,3,7,8-PeCDD	U	4.1	pg/g	4.10	63.2
39227-28-6	1,2,3,4,7,8-HxCDD	U	6.04	pg/g	6.04	63.2
57653-85-7	1,2,3,6,7,8-HxCDD		107	pg/g	6.47	63.2
19408-74-3	1,2,3,7,8,9-HxCDD	J	31.3	pg/g	6.68	63.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		2210	pg/g	10.0	63.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		27800	pg/g	21.1	126
51207-31-9	2,3,7,8-TCDF	J	8.24	pg/g	3.01	12.6
57117-41-6	1,2,3,7,8-PeCDF	J	3.01	pg/g	2.43	63.2
57117-31-4	2,3,4,7,8-PeCDF	J	7.59	pg/g	2.48	63.2
70648-26-9	1,2,3,4,7,8-HxCDF	J	31.7	pg/g	2.76	63.2
57117-44-9	1,2,3,6,7,8-HxCDF	J	11.9	pg/g	2.88	63.2
60851-34-5	2,3,4,6,7,8-HxCDF	J	19.8	pg/g	3.11	63.2
72918-21-9	1,2,3,7,8,9-HxCDF	J	9.64	pg/g	3.03	63.2
67562-39-4	1,2,3,4,6,7,8-HpCDF		333	pg/g	2.78	63.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	29.4	pg/g	4.40	63.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF		899	pg/g	5.39	126

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2270	2530	pg/g	89.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		2480	2530	pg/g	98.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2360	2530	pg/g	93.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1870	2530	pg/g	73.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2350	2530	pg/g	93.0	(23%-140%)
13C-OCDD		4800	5060	pg/g	95.0	(17%-157%)
13C-2,3,7,8-TCDF		2390	2530	pg/g	94.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		2700	2530	pg/g	107	(24%-185%)
13C-2,3,4,7,8-PeCDF		2630	2530	pg/g	104	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2230	2530	pg/g	88.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2110	2530	pg/g	83.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2180	2530	pg/g	86.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2080	2530	pg/g	82.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2280	2530	pg/g	90.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2300	2530	pg/g	90.9	(26%-138%)
37Cl-2,3,7,8-TCDD		267	253	pg/g	106	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223002	Date Collected: 06/09/2014 15:50	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 26.5
Client ID: SFRA-91		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/12/2014 18:30	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_3-7		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.55 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		778	pg/g	1.32	8.78
40321-76-4	1,2,3,7,8-PeCDD	U	2.44	pg/g	2.44	43.9
39227-28-6	1,2,3,4,7,8-HxCDD	JQ	14.8	pg/g	3.32	43.9
57653-85-7	1,2,3,6,7,8-HxCDD	Q	72.4	pg/g	4.46	43.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	21.6	pg/g	4.07	43.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		1010	pg/g	6.27	43.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14300	pg/g	14.1	87.8
51207-31-9	2,3,7,8-TCDF	J	6.70	pg/g	2.11	8.78
57117-41-6	1,2,3,7,8-PeCDF	J	1.56	pg/g	1.40	43.9
57117-31-4	2,3,4,7,8-PeCDF	J	4.02	pg/g	1.41	43.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	14.2	pg/g	1.54	43.9
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.04	pg/g	1.54	43.9
60851-34-5	2,3,4,6,7,8-HxCDF	J	9.37	pg/g	1.52	43.9
72918-21-9	1,2,3,7,8,9-HxCDF	J	2.88	pg/g	2.46	43.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		160	pg/g	2.16	43.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	12.9	pg/g	3.46	43.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		286	pg/g	3.93	87.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1430	1760	pg/g	81.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1520	1760	pg/g	86.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1450	1760	pg/g	82.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1000	1760	pg/g	57.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1780	1760	pg/g	101	(23%-140%)
13C-OCDD		3450	3510	pg/g	98.2	(17%-157%)
13C-2,3,7,8-TCDF		1580	1760	pg/g	90.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1620	1760	pg/g	92.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1610	1760	pg/g	91.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1630	1760	pg/g	93.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1530	1760	pg/g	87.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1620	1760	pg/g	92.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1450	1760	pg/g	82.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1670	1760	pg/g	95.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1720	1760	pg/g	97.9	(26%-138%)
37Cl-2,3,7,8-TCDD		169	176	pg/g	96.5	(35%-197%)

Comments:

- J** Value is estimated
- Q** Quantitative Interference
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223003	Date Collected: 06/09/2014 16:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 15.1
Client ID: SFRA-92		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/12/2014 19:18	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_3-8		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	2.92	pg/g	0.975	10.4
40321-76-4	1,2,3,7,8-PeCDD	U	1.01	pg/g	1.01	52.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.31	pg/g	2.31	52.1
57653-85-7	1,2,3,6,7,8-HxCDD	U	2.25	pg/g	2.25	52.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.42	pg/g	2.42	52.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		64.9	pg/g	3.08	52.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		4650	pg/g	10.8	104
51207-31-9	2,3,7,8-TCDF	J	1.46	pg/g	1.07	10.4
57117-41-6	1,2,3,7,8-PeCDF	U	1.06	pg/g	1.06	52.1
57117-31-4	2,3,4,7,8-PeCDF	U	1.03	pg/g	1.03	52.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.13	pg/g	1.13	52.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.04	pg/g	1.04	52.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.11	pg/g	1.11	52.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.64	pg/g	1.64	52.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	4.77	pg/g	1.39	52.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.11	pg/g	2.11	52.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	8.67	pg/g	8.67	104

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1790	2080	pg/g	85.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1940	2080	pg/g	93.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1820	2080	pg/g	87.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1790	2080	pg/g	86.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1960	2080	pg/g	94.2	(23%-140%)
13C-OCDD		3560	4170	pg/g	85.3	(17%-157%)
13C-2,3,7,8-TCDF		1970	2080	pg/g	94.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2020	2080	pg/g	97.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		2040	2080	pg/g	98.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1860	2080	pg/g	89.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1870	2080	pg/g	89.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1880	2080	pg/g	90.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1750	2080	pg/g	84.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1890	2080	pg/g	90.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1920	2080	pg/g	91.9	(26%-138%)
37Cl-2,3,7,8-TCDD		207	208	pg/g	99.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223004	Date Collected: 06/09/2014 16:23	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 20.5
Client ID: SFRA-93		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/12/2014 20:06	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_3-9		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		895	pg/g	1.53	12.2
40321-76-4	1,2,3,7,8-PeCDD	U	2.49	pg/g	2.49	61.1
39227-28-6	1,2,3,4,7,8-HxCDD	J	11.4	pg/g	2.61	61.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	32.9	pg/g	2.78	61.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	14.3	pg/g	2.86	61.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		757	pg/g	7.45	61.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12300	pg/g	18.0	122
51207-31-9	2,3,7,8-TCDF	J	9.96	pg/g	2.76	12.2
57117-41-6	1,2,3,7,8-PeCDF	U	2.14	pg/g	2.14	61.1
57117-31-4	2,3,4,7,8-PeCDF	J	3.93	pg/g	2.13	61.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	13.1	pg/g	2.22	61.1
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.11	pg/g	2.26	61.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	7.89	pg/g	2.26	61.1
72918-21-9	1,2,3,7,8,9-HxCDF	J	3.81	pg/g	3.03	61.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		127	pg/g	2.76	61.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	9.77	pg/g	4.47	61.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		301	pg/g	5.52	122

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2190	2440	pg/g	89.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2390	2440	pg/g	97.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2100	2440	pg/g	85.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2060	2440	pg/g	84.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2220	2440	pg/g	90.9	(23%-140%)
13C-OCDD		4230	4880	pg/g	86.5	(17%-157%)
13C-2,3,7,8-TCDF		2330	2440	pg/g	95.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		2530	2440	pg/g	104	(24%-185%)
13C-2,3,4,7,8-PeCDF		2510	2440	pg/g	103	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2060	2440	pg/g	84.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2060	2440	pg/g	84.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2050	2440	pg/g	83.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2000	2440	pg/g	82.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2180	2440	pg/g	89.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2100	2440	pg/g	86.2	(26%-138%)
37Cl-2,3,7,8-TCDD		251	244	pg/g	103	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223005	Date Collected: 06/09/2014 16:18	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 18.7
Client ID: SFRA-94		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/12/2014 20:54	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_3-10		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2980	pg/g	1.66	12.2
40321-76-4	1,2,3,7,8-PeCDD	U	13.7	pg/g	13.7	60.9
39227-28-6	1,2,3,4,7,8-HxCDD	J	5.53	pg/g	3.43	60.9
57653-85-7	1,2,3,6,7,8-HxCDD	J	19.8	pg/g	3.43	60.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	7.94	pg/g	3.65	60.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		355	pg/g	6.89	60.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11000	pg/g	19.3	122
51207-31-9	2,3,7,8-TCDF		16.1	pg/g	2.41	12.2
57117-41-6	1,2,3,7,8-PeCDF	J	1.70	pg/g	1.22	60.9
57117-31-4	2,3,4,7,8-PeCDF	J	2.26	pg/g	1.18	60.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	5.31	pg/g	1.76	60.9
57117-44-9	1,2,3,6,7,8-HxCDF	J	2.58	pg/g	1.77	60.9
60851-34-5	2,3,4,6,7,8-HxCDF	J	3.34	pg/g	1.83	60.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.56	pg/g	2.56	60.9
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	55.9	pg/g	1.36	60.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	4.94	pg/g	2.14	60.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	89.0	pg/g	4.14	122

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2070	2430	pg/g	84.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		2410	2430	pg/g	99.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2030	2430	pg/g	83.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2000	2430	pg/g	82.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2260	2430	pg/g	93.0	(23%-140%)
13C-OCDD		4260	4870	pg/g	87.6	(17%-157%)
13C-2,3,7,8-TCDF		2310	2430	pg/g	94.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		2080	2430	pg/g	85.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		2520	2430	pg/g	103	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2080	2430	pg/g	85.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2060	2430	pg/g	84.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2100	2430	pg/g	86.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1910	2430	pg/g	78.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2150	2430	pg/g	88.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2160	2430	pg/g	88.9	(26%-138%)
37Cl-2,3,7,8-TCDD		250	243	pg/g	103	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223005	Date Collected: 06/09/2014 16:18	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 18.7
Client ID: SFRA-94		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/17/2014 09:44	Analyst: JTF	Instrument: HRP763
Data File: b16jun14a-6		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		18.8	pg/g	4.67	12.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223006	Date Collected: 06/09/2014 17:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 22
Client ID: SFRA-95		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/18/2014 00:27	Analyst: JTF	Instrument: HRP750
Data File: A17JUN14C-10		Dilution: 5
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		16300	pg/g	14.6	59.3
40321-76-4	1,2,3,7,8-PeCDD	U	8.47	pg/g	8.47	297
39227-28-6	1,2,3,4,7,8-HxCDD	U	28	pg/g	28.0	297
57653-85-7	1,2,3,6,7,8-HxCDD	J	110	pg/g	28.2	297
19408-74-3	1,2,3,7,8,9-HxCDD	U	29.9	pg/g	29.9	297
35822-46-9	1,2,3,4,6,7,8-HpCDD		1050	pg/g	48.9	297
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13300	pg/g	159	593
51207-31-9	2,3,7,8-TCDF		91.2	pg/g	18.4	59.3
57117-41-6	1,2,3,7,8-PeCDF	U	9.85	pg/g	9.85	297
57117-31-4	2,3,4,7,8-PeCDF	U	9.64	pg/g	9.64	297
70648-26-9	1,2,3,4,7,8-HxCDF	U	23.3	pg/g	23.3	297
57117-44-9	1,2,3,6,7,8-HxCDF	U	13.9	pg/g	13.9	297
60851-34-5	2,3,4,6,7,8-HxCDF	U	23.5	pg/g	23.5	297
72918-21-9	1,2,3,7,8,9-HxCDF	U	23.5	pg/g	23.5	297
67562-39-4	1,2,3,4,6,7,8-HpCDF		575	pg/g	17.7	297
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	33.2	pg/g	33.2	297
39001-02-0	1,2,3,4,6,7,8,9-OCDF		745	pg/g	117	593

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2030	2370	pg/g	85.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		2070	2370	pg/g	87.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2090	2370	pg/g	87.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2160	2370	pg/g	91.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1860	2370	pg/g	78.2	(23%-140%)
13C-OCDD		2530	4750	pg/g	53.3	(17%-157%)
13C-2,3,7,8-TCDF		2260	2370	pg/g	95.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		2150	2370	pg/g	90.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		2130	2370	pg/g	89.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2220	2370	pg/g	93.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2270	2370	pg/g	95.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2200	2370	pg/g	92.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1850	2370	pg/g	78.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1840	2370	pg/g	77.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1680	2370	pg/g	70.7	(26%-138%)
37Cl-2,3,7,8-TCDD		290	237	pg/g	122	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223006	Date Collected: 06/09/2014 17:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 22
Client ID: SFRA-95		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/17/2014 10:04	Analyst: JTF	Instrument: HRP763
Data File: b16jun14a-7		Dilution: 5
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		88.3	pg/g	18.8	59.3

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223007	Date Collected: 06/09/2014 17:02	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 22.5
Client ID: SFRA-96		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/17/2014 10:57	Analyst: JTF	Instrument: HRP750
Data File: A17JUN14A-4		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.24 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		964	pg/g	3.00	10.4
40321-76-4	1,2,3,7,8-PeCDD	U	4.12	pg/g	4.12	52.1
39227-28-6	1,2,3,4,7,8-HxCDD	QU	11.1	pg/g	11.1	52.1
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	34.7	pg/g	12.2	52.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	12.3	pg/g	12.3	52.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		376	pg/g	12.8	52.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9070	pg/g	69.1	104
51207-31-9	2,3,7,8-TCDF	J	8.31	pg/g	3.67	10.4
57117-41-6	1,2,3,7,8-PeCDF	J	3.79	pg/g	3.58	52.1
57117-31-4	2,3,4,7,8-PeCDF	J	3.85	pg/g	3.54	52.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	7.52	pg/g	7.04	52.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	7.56	pg/g	7.56	52.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	7.14	pg/g	7.14	52.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	10.9	pg/g	10.9	52.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		74.7	pg/g	4.06	52.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	7.98	pg/g	7.02	52.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		220	pg/g	30.6	104

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1690	2080	pg/g	81.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1800	2080	pg/g	86.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1630	2080	pg/g	78.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1680	2080	pg/g	80.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1810	2080	pg/g	86.9	(23%-140%)
13C-OCDD		3140	4160	pg/g	75.4	(17%-157%)
13C-2,3,7,8-TCDF		1740	2080	pg/g	83.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1750	2080	pg/g	84.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1700	2080	pg/g	81.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1580	2080	pg/g	76.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1600	2080	pg/g	76.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1590	2080	pg/g	76.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1460	2080	pg/g	70.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1680	2080	pg/g	80.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1610	2080	pg/g	77.2	(26%-138%)
37Cl-2,3,7,8-TCDD		193	208	pg/g	92.7	(35%-197%)

Comments:

- J** Value is estimated
Q Quantitative Interference
U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 6223008	Date Collected: 06/09/2014 17:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/10/2014 10:15	%Moisture: 20
Client ID: SFRA-97		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/17/2014 23:38	Analyst: JTF	Instrument: HRP750
Data File: A17JUN14C-9		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		145	pg/g	1.43	11.9
40321-76-4	1,2,3,7,8-PeCDD	U	1.86	pg/g	1.86	59.6
39227-28-6	1,2,3,4,7,8-HxCDD	QU	4.48	pg/g	4.48	59.6
57653-85-7	1,2,3,6,7,8-HxCDD	JQ	7.55	pg/g	5.27	59.6
19408-74-3	1,2,3,7,8,9-HxCDD	U	5.19	pg/g	5.19	59.6
35822-46-9	1,2,3,4,6,7,8-HpCDD		116	pg/g	5.48	59.6
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7400	pg/g	22.0	119
51207-31-9	2,3,7,8-TCDF	J	2.74	pg/g	1.85	11.9
57117-41-6	1,2,3,7,8-PeCDF	J	2.81	pg/g	1.18	59.6
57117-31-4	2,3,4,7,8-PeCDF	U	1.11	pg/g	1.11	59.6
70648-26-9	1,2,3,4,7,8-HxCDF	J	4.31	pg/g	1.45	59.6
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.74	pg/g	1.54	59.6
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.33	pg/g	2.33	59.6
72918-21-9	1,2,3,7,8,9-HxCDF	J	2.62	pg/g	2.45	59.6
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	29.9	pg/g	1.60	59.6
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	4.84	pg/g	2.93	59.6
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	70.4	pg/g	4.84	119

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2000	2380	pg/g	84.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		2090	2380	pg/g	87.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q	1830	2380	pg/g	76.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q	1750	2380	pg/g	73.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2020	2380	pg/g	84.9	(23%-140%)
13C-OCDD		3290	4760	pg/g	69.0	(17%-157%)
13C-2,3,7,8-TCDF		2290	2380	pg/g	96.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		2170	2380	pg/g	90.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		2200	2380	pg/g	92.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2060	2380	pg/g	86.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1970	2380	pg/g	82.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2070	2380	pg/g	86.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1840	2380	pg/g	77.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2020	2380	pg/g	84.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1850	2380	pg/g	77.6	(26%-138%)
37Cl-2,3,7,8-TCDD		243	238	pg/g	102	(35%-197%)

Comments:

- J** Value is estimated
Q Quantitative Interference
U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6223

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010638	LCSD for batch 26128	13C-2,3,7,8-TCDD		102	(20%-175%)
		13C-1,2,3,7,8-PeCDD		111	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		104	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		103	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		114	(22%-166%)
		13C-OCDD		101	(13%-199%)
		13C-2,3,7,8-TCDF		115	(22%-152%)
		13C-1,2,3,7,8-PeCDF		118	(21%-192%)
		13C-2,3,4,7,8-PeCDF		116	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		111	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		105	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		108	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		102	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		112	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		108	(20%-186%)
		37Cl-2,3,7,8-TCDD		124	(31%-191%)
12010636	MB for batch 26128	13C-2,3,7,8-TCDD		74.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		82.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		74.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		71.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		81.8	(23%-140%)
		13C-OCDD		72.8	(17%-157%)
		13C-2,3,7,8-TCDF		81.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		88.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		93.7	(35%-197%)
6223001	SFRA-90	13C-2,3,7,8-TCDD		89.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		98.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		93.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.0	(23%-140%)
		13C-OCDD		95.0	(17%-157%)
		13C-2,3,7,8-TCDF		94.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		107	(24%-185%)
		13C-2,3,4,7,8-PeCDF		104	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		88.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		90.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		106	(35%-197%)
6223002	SFRA-91	13C-2,3,7,8-TCDD		81.3	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6223

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6223002	SFRA-91	13C-1,2,3,7,8-PeCDD		86.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD	Q	82.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	57.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		101	(23%-140%)
		13C-OCDD		98.2	(17%-157%)
		13C-2,3,7,8-TCDF		90.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		93.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		92.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		95.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		97.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		96.5	(35%-197%)
6223003	SFRA-92	13C-2,3,7,8-TCDD		85.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		93.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		87.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.2	(23%-140%)
		13C-OCDD		85.3	(17%-157%)
		13C-2,3,7,8-TCDF		94.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		97.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		98.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		89.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		89.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		91.9	(26%-138%)
37Cl-2,3,7,8-TCDD		99.2	(35%-197%)		
6223004	SFRA-93	13C-2,3,7,8-TCDD		89.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		97.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		84.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.9	(23%-140%)
		13C-OCDD		86.5	(17%-157%)
		13C-2,3,7,8-TCDF		95.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		104	(24%-185%)
		13C-2,3,4,7,8-PeCDF		103	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		84.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		84.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		89.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		86.2	(26%-138%)
37Cl-2,3,7,8-TCDD		103	(35%-197%)		
6223005	SFRA-94	13C-2,3,7,8-TCDD		84.8	(25%-164%)
		13C-1,2,3,7,8-PeCDD		99.1	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6223

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6223005	SFRA-94	13C-1,2,3,4,7,8-HxCDD		83.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.0	(23%-140%)
		13C-OCDD		87.6	(17%-157%)
		13C-2,3,7,8-TCDF		94.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		103	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		84.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		88.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		103	(35%-197%)
		12010639	SFRA-90(6223001MS)	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				95.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				94.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				63.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				86.1	(23%-140%)
13C-OCDD				85.4	(17%-157%)
13C-2,3,7,8-TCDF				90.9	(24%-169%)
13C-1,2,3,7,8-PeCDF				101	(24%-185%)
13C-2,3,4,7,8-PeCDF				98.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				81.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				78.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				80.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				71.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				84.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				83.9	(26%-138%)
37Cl-2,3,7,8-TCDD		101	(35%-197%)		
12010640	SFRA-90(6223001MSD)	13C-2,3,7,8-TCDD		80.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		92.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		74.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.4	(23%-140%)
		13C-OCDD		81.8	(17%-157%)
		13C-2,3,7,8-TCDF		85.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		93.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		75.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		76.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		71.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.6	(26%-138%)
37Cl-2,3,7,8-TCDD		95.1	(35%-197%)		
12010637	LCS for batch 26128	13C-2,3,7,8-TCDD		67.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		69.7	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		64.8	(21%-193%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6223

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010637	LCS for batch 26128	13C-1,2,3,6,7,8-HxCDD		73.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		60.2	(22%-166%)
		13C-OCDD		50.8	(13%-199%)
		13C-2,3,7,8-TCDF		67.0	(22%-152%)
		13C-1,2,3,7,8-PeCDF		69.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		66.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		61.2	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		67.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		62.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		54.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		60.1	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		53.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		91.0	(31%-191%)
		6223007	SFRA-96	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				86.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD	Q			78.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD	Q			80.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				86.9	(23%-140%)
13C-OCDD				75.4	(17%-157%)
13C-2,3,7,8-TCDF				83.6	(24%-169%)
13C-1,2,3,7,8-PeCDF				84.2	(24%-185%)
13C-2,3,4,7,8-PeCDF				81.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				76.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				76.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				76.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				70.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				80.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		77.2	(26%-138%)		
37Cl-2,3,7,8-TCDD		92.7	(35%-197%)		
6223008	SFRA-97	13C-2,3,7,8-TCDD		84.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD	Q	76.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD	Q	73.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.9	(23%-140%)
		13C-OCDD		69.0	(17%-157%)
		13C-2,3,7,8-TCDF		96.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		86.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		82.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		77.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		77.6	(26%-138%)		
37Cl-2,3,7,8-TCDD		102	(35%-197%)		
6223006	SFRA-95	13C-2,3,7,8-TCDD		85.4	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		87.3	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		87.9	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		91.2	D (28%-130%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6223

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6223006	SFRA-95	13C-1,2,3,4,6,7,8-HpCDD		78.2 D	(23%-140%)
		13C-OCDD		53.3 D	(17%-157%)
		13C-2,3,7,8-TCDF		95.3 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.6 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.8 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		93.3 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		95.5 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		92.8 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.1 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.5 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		70.7 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		122 D	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6223

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26128

Matrix: SOLID

Lab Sample ID: 12010637

Instrument: HRP750

Analysis Date: 06/17/2014 10:09

Dilution: 1

Analyst: JTF

Prep Batch ID: 26128

Batch ID: 26130

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	19.1	95.3	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	96.8	96.8	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	94.4	94.4	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	97.8	97.8	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	97.0	97	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	95.8	95.8	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	203	101	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	18.2	91	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	95.8	95.8	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	93.7	93.7	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	101	101	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	93.6	93.6	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	96.5	96.5	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	105	105	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	97.6	97.6	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	94.2	94.2	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	178	89.1	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6223

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26128

Matrix: SOLID

Lab Sample ID: 12010638

Instrument: HRP750

Analysis Date: 06/12/2014 16:05

Dilution: 1

Analyst: JTF

Prep Batch ID: 26128

Batch ID: 26130

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance	RPD	Acceptance
					Limits	%	Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	22.7	113	67-158	17.4	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	108	108	70-142	11.3	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	108	108	70-164	13.5	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	106	106	76-134	8.24	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	114	114	64-162	15.9	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	106	106	70-140	9.85	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	213	107	78-144	5.05	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	20.0	99.8	75-158	9.27	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	106	106	80-134	10.5	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	106	106	68-160	11.9	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	103	103	72-134	2.11	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	105	105	84-130	11.6	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	104	104	70-156	7.91	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	108	108	78-130	2.87	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	101	101	82-122	3.50	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	103	103	78-138	9.22	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	207	103	63-170	14.8	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6223

Sample Type: Matrix Spike

Client ID: SFRA-90(6223001MS)

Matrix: SOLID

Lab Sample ID: 12010639

%Moisture: 22.5

Instrument: HRP750

Analysis Date: 06/13/2014 04:15

Dilution: 1

Analyst: JTF

Prep Batch ID: 26128

Batch ID: 26130

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	MS 2,3,7,8-TCDD	255		764	86.4	70-130
40321-76-4	MS 1,2,3,7,8-PeCDD	1280	U	1310	103	70-130
39227-28-6	MS 1,2,3,4,7,8-HxCDD	1280	U	1280	100	70-130
57653-85-7	MS 1,2,3,6,7,8-HxCDD	1280		1400	101	70-130
19408-74-3	MS 1,2,3,7,8,9-HxCDD	1280	J	1440	110	70-130
35822-46-9	MS 1,2,3,4,6,7,8-HpCDD	1280		3950	136 *	70-130
3268-87-9	MS 1,2,3,4,6,7,8,9-OCDD	2550		35100	283 *	70-130
51207-31-9	MS 2,3,7,8-TCDF	255	J	249	94.4	70-130
57117-41-6	MS 1,2,3,7,8-PeCDF	1280	J	1240	96.7	70-130
57117-31-4	MS 2,3,4,7,8-PeCDF	1280	J	1260	98.2	70-130
70648-26-9	MS 1,2,3,4,7,8-HxCDF	1280	J	1250	95	70-130
57117-44-9	MS 1,2,3,6,7,8-HxCDF	1280	J	1260	98.1	70-130
60851-34-5	MS 2,3,4,6,7,8-HxCDF	1280	J	1250	96.5	70-130
72918-21-9	MS 1,2,3,7,8,9-HxCDF	1280	J	1260	98.1	70-130
67562-39-4	MS 1,2,3,4,6,7,8-HpCDF	1280		1580	97.4	70-130
55673-89-7	MS 1,2,3,4,7,8,9-HpCDF	1280	J	1250	95.7	70-130
39001-02-0	MS 1,2,3,4,6,7,8,9-OCDF	2550		3550	104	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6223
Client ID: SFRA-90(6223001MSD)
Lab Sample ID: 12010640
Instrument: HRP750
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 22.5
Analysis Date: 06/13/2014 05:04
Prep Batch ID: 26128
Batch ID: 26130
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	249		819	111	70-130	6.93	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1240	U	1220	98	70-130	7.45	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1240	U	1280	103	70-130	0.184	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1240		1330	97.9	70-130	5.63	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1240	J	1370	108	70-130	4.68	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1240		3370	92.4	70-130	16.1	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2490		31900	163 *	70-130	9.43	0-20
51207-31-9	MSD 2,3,7,8-TCDF	249	J	252	97.7	70-130	0.942	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1240	J	1240	99	70-130	0.217	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1240	J	1260	100	70-130	0.282	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1240	J	1250	98	70-130	0.503	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1240	J	1260	99.9	70-130	0.663	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1240	J	1250	98.5	70-130	0.481	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1240	J	1290	103	70-130	2.54	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1240		1500	94	70-130	4.73	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1240	J	1220	95.4	70-130	2.74	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2490		3420	101	70-130	3.85	0-20

Method Blank Summary

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SDG Number: 6223
Client ID: MB for batch 26128
Lab Sample ID: 12010636
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 11-JUN-14

Matrix: SOLID
Data File: A11JUN14A_3-5
Analyzed: 06/12/14 16:53

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCSD for batch 26128	12010638	A11JUN14A_3-4	06/12/14	1605
02 SFRA-90	6223001	A11JUN14A_3-6	06/12/14	1741
03 SFRA-91	6223002	A11JUN14A_3-7	06/12/14	1830
04 SFRA-92	6223003	A11JUN14A_3-8	06/12/14	1918
05 SFRA-93	6223004	A11JUN14A_3-9	06/12/14	2006
06 SFRA-94	6223005	A11JUN14A_3-10	06/12/14	2054
07 SFRA-90(6223001MS)	12010639	A11JUN14A_4-5	06/13/14	0415
08 SFRA-90(6223001MSD)	12010640	A11JUN14A_4-6	06/13/14	0504
09 SFRA-94	6223005	b16jun14a-6	06/17/14	0944
10 SFRA-95	6223006	b16jun14a-7	06/17/14	1004
11 LCS for batch 26128	12010637	A17JUN14A-3	06/17/14	1009
12 SFRA-96	6223007	A17JUN14A-4	06/17/14	1057
13 SFRA-97	6223008	A17JUN14C-9	06/17/14	2338
14 SFRA-95	6223006	A17JUN14C-10	06/18/14	0027

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010636		Matrix: SOLID
Client Sample: QC for batch 26128		
Client ID: MB for batch 26128		Prep Basis: As Received
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/12/2014 16:53	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_3-5		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.168	pg/g	0.168	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.372	pg/g	0.130	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.466	pg/g	0.358	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.498	pg/g	0.498	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.596	pg/g	0.382	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.638	pg/g	0.270	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	2.40	pg/g	0.534	10.0
51207-31-9	2,3,7,8-TCDF	J	0.162	pg/g	0.140	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.462	pg/g	0.131	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.428	pg/g	0.135	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.614	pg/g	0.216	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.464	pg/g	0.218	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.584	pg/g	0.584	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.744	pg/g	0.310	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.710	pg/g	0.188	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.618	pg/g	0.618	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	1.42	pg/g	0.490	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		148	200	pg/g	74.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		165	200	pg/g	82.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		148	200	pg/g	74.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		143	200	pg/g	71.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		164	200	pg/g	81.8	(23%-140%)
13C-OCDD		291	400	pg/g	72.8	(17%-157%)
13C-2,3,7,8-TCDF		164	200	pg/g	81.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		178	200	pg/g	88.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		171	200	pg/g	85.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		157	200	pg/g	78.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		151	200	pg/g	75.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		155	200	pg/g	77.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		141	200	pg/g	70.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		160	200	pg/g	80.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		156	200	pg/g	78.2	(26%-138%)
37Cl-2,3,7,8-TCDD		18.7	20.0	pg/g	93.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010637		Matrix: SOLID
Client Sample: QC for batch 26128		
Client ID: LCS for batch 26128		Prep Basis: As Received
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/17/2014 10:09	Analyst: JTF	Instrument: HRP750
Data File: A17JUN14A-3		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.1	pg/g	0.248	1.00
40321-76-4	1,2,3,7,8-PeCDD		96.8	pg/g	0.374	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		94.4	pg/g	1.18	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.8	pg/g	1.19	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		97.0	pg/g	1.26	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.8	pg/g	1.46	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		203	pg/g	3.88	10.0
51207-31-9	2,3,7,8-TCDF		18.2	pg/g	0.260	1.00
57117-41-6	1,2,3,7,8-PeCDF		95.8	pg/g	0.684	5.00
57117-31-4	2,3,4,7,8-PeCDF		93.7	pg/g	0.656	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		101	pg/g	1.33	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		93.6	pg/g	1.24	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		96.5	pg/g	1.33	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		105	pg/g	2.08	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.6	pg/g	1.20	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		94.2	pg/g	2.04	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		178	pg/g	3.16	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		136	200	pg/g	67.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		139	200	pg/g	69.7	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		130	200	pg/g	64.8	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		146	200	pg/g	73.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		120	200	pg/g	60.2	(22%-166%)
13C-OCDD		203	400	pg/g	50.8	(13%-199%)
13C-2,3,7,8-TCDF		134	200	pg/g	67.0	(22%-152%)
13C-1,2,3,7,8-PeCDF		139	200	pg/g	69.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		133	200	pg/g	66.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		122	200	pg/g	61.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		134	200	pg/g	67.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		125	200	pg/g	62.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		108	200	pg/g	54.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		120	200	pg/g	60.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		106	200	pg/g	53.1	(20%-186%)
37Cl-2,3,7,8-TCDD		18.2	20.0	pg/g	91.0	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010638		Matrix: SOLID
Client Sample: QC for batch 26128		
Client ID: LCSD for batch 26128		Prep Basis: As Received
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/12/2014 16:05	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_3-4		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		22.7	pg/g	0.0904	1.00
40321-76-4	1,2,3,7,8-PeCDD		108	pg/g	0.200	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		108	pg/g	0.312	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		106	pg/g	0.326	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		114	pg/g	0.340	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		106	pg/g	0.416	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		213	pg/g	0.682	10.0
51207-31-9	2,3,7,8-TCDF		20.0	pg/g	0.0948	1.00
57117-41-6	1,2,3,7,8-PeCDF		106	pg/g	0.196	5.00
57117-31-4	2,3,4,7,8-PeCDF		106	pg/g	0.197	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		103	pg/g	0.312	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		105	pg/g	0.312	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		104	pg/g	0.324	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		108	pg/g	0.464	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.262	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		103	pg/g	0.432	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		207	pg/g	0.576	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		204	200	pg/g	102	(20%-175%)
13C-1,2,3,7,8-PeCDD		221	200	pg/g	111	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		208	200	pg/g	104	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		207	200	pg/g	103	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		228	200	pg/g	114	(22%-166%)
13C-OCDD		403	400	pg/g	101	(13%-199%)
13C-2,3,7,8-TCDF		230	200	pg/g	115	(22%-152%)
13C-1,2,3,7,8-PeCDF		236	200	pg/g	118	(21%-192%)
13C-2,3,4,7,8-PeCDF		233	200	pg/g	116	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		222	200	pg/g	111	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		210	200	pg/g	105	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		216	200	pg/g	108	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		205	200	pg/g	102	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		224	200	pg/g	112	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		216	200	pg/g	108	(20%-186%)
37Cl-2,3,7,8-TCDD		24.8	20.0	pg/g	124	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010639	Date Collected: 06/09/2014 15:45	Matrix: SOLID
Client Sample: QC for batch 26128	Date Received: 06/10/2014 10:15	%Moisture: 22.5
Client ID: SFRA-90(6223001MS)		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/13/2014 04:15	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_4-5		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		764	pg/g	1.98	12.8
40321-76-4	1,2,3,7,8-PeCDD		1310	pg/g	4.24	63.9
39227-28-6	1,2,3,4,7,8-HxCDD		1280	pg/g	12.2	63.9
57653-85-7	1,2,3,6,7,8-HxCDD		1400	pg/g	12.9	63.9
19408-74-3	1,2,3,7,8,9-HxCDD		1440	pg/g	13.4	63.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		3950	pg/g	16.5	63.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		35100	pg/g	33.2	128
51207-31-9	2,3,7,8-TCDF		249	pg/g	2.91	12.8
57117-41-6	1,2,3,7,8-PeCDF		1240	pg/g	3.58	63.9
57117-31-4	2,3,4,7,8-PeCDF		1260	pg/g	3.50	63.9
70648-26-9	1,2,3,4,7,8-HxCDF		1250	pg/g	8.61	63.9
57117-44-9	1,2,3,6,7,8-HxCDF		1260	pg/g	8.71	63.9
60851-34-5	2,3,4,6,7,8-HxCDF		1250	pg/g	10.7	63.9
72918-21-9	1,2,3,7,8,9-HxCDF		1260	pg/g	8.66	63.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		1580	pg/g	5.85	63.9
55673-89-7	1,2,3,4,7,8,9-HpCDF		1250	pg/g	9.94	63.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		3550	pg/g	15.8	128

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2250	2550	pg/g	88.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		2430	2550	pg/g	95.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2420	2550	pg/g	94.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1610	2550	pg/g	63.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2200	2550	pg/g	86.1	(23%-140%)
13C-OCDD		4360	5110	pg/g	85.4	(17%-157%)
13C-2,3,7,8-TCDF		2320	2550	pg/g	90.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		2580	2550	pg/g	101	(24%-185%)
13C-2,3,4,7,8-PeCDF		2510	2550	pg/g	98.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2070	2550	pg/g	81.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2000	2550	pg/g	78.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2040	2550	pg/g	80.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1820	2550	pg/g	71.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2150	2550	pg/g	84.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2140	2550	pg/g	83.9	(26%-138%)
37Cl-2,3,7,8-TCDD		258	255	pg/g	101	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6223	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010640	Date Collected: 06/09/2014 15:45	Matrix: SOLID
Client Sample: QC for batch 26128	Date Received: 06/10/2014 10:15	%Moisture: 22.5
Client ID: SFRA-90(6223001MSD)		Prep Basis: Dry Weight
Batch ID: 26130	Method: EPA Method 1613B	
Run Date: 06/13/2014 05:04	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_4-6		Dilution: 1
Prep Batch: 26128	Prep Method: SW846 3540C	
Prep Date: 11-JUN-14	Prep Aliquot: 1.036 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		819	pg/g	1.48	12.4
40321-76-4	1,2,3,7,8-PeCDD		1220	pg/g	3.91	62.2
39227-28-6	1,2,3,4,7,8-HxCDD		1280	pg/g	7.62	62.2
57653-85-7	1,2,3,6,7,8-HxCDD		1330	pg/g	8.07	62.2
19408-74-3	1,2,3,7,8,9-HxCDD		1370	pg/g	8.34	62.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		3370	pg/g	14.8	62.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		31900	pg/g	34.1	124
51207-31-9	2,3,7,8-TCDF		252	pg/g	2.76	12.4
57117-41-6	1,2,3,7,8-PeCDF		1240	pg/g	3.88	62.2
57117-31-4	2,3,4,7,8-PeCDF		1260	pg/g	4.06	62.2
70648-26-9	1,2,3,4,7,8-HxCDF		1250	pg/g	8.09	62.2
57117-44-9	1,2,3,6,7,8-HxCDF		1260	pg/g	8.34	62.2
60851-34-5	2,3,4,6,7,8-HxCDF		1250	pg/g	9.01	62.2
72918-21-9	1,2,3,7,8,9-HxCDF		1290	pg/g	9.51	62.2
67562-39-4	1,2,3,4,6,7,8-HpCDF		1500	pg/g	5.30	62.2
55673-89-7	1,2,3,4,7,8,9-HpCDF		1220	pg/g	8.14	62.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF		3420	pg/g	16.1	124

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2000	2490	pg/g	80.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2300	2490	pg/g	92.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1950	2490	pg/g	78.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1850	2490	pg/g	74.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2000	2490	pg/g	80.4	(23%-140%)
13C-OCDD		4070	4980	pg/g	81.8	(17%-157%)
13C-2,3,7,8-TCDF		2120	2490	pg/g	85.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		2310	2490	pg/g	93.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		2270	2490	pg/g	91.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1890	2490	pg/g	75.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1900	2490	pg/g	76.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2490	pg/g	76.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1790	2490	pg/g	71.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1980	2490	pg/g	79.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1960	2490	pg/g	78.6	(26%-138%)
37Cl-2,3,7,8-TCDD		237	249	pg/g	95.1	(35%-197%)

Comments:

June 17, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6228

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 12, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request
 CFA Work Order Number: 6228

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Phone #: 314-517-6798

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Stricker Forest Removal Action Fax #:
 Address: 20 Jamestown Farm Dr. Florissant, Mo 63034
 Collected by: R Clayton Send Results To: dave.kinofth@charter.net
rcclaytor@envirotech.com

Total number of containers	Sample Analysis Requested ⁽⁵⁾										Preservative Type (6)	
	1	2	3	4	5	6	7	8	9	10		
16/32											Ice	<-- Preservative Type (6)
												Comments Note: extra sample is required for sample specific QC

Sample ID <i>* For composites - indicate start and stop date/time</i>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾
<u>SFRA-98</u>	<u>06-11-14</u>	<u>1505</u>			<u>S</u>
<u>SFRA-99</u>	<u>06-11-14</u>	<u>1510</u>			<u>S</u>

TAT Requested: Normal: Rush: X Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time Zone
 Eastern Pacific
 Central Other
 Mountain

Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time
<u>R Clayton</u>	<u>6-11-14</u>	<u>1630</u>
<u>Cynde Larkins</u>	<u>12 JUN 14</u>	<u>1000</u>

Sample Shipping and Delivery Details	
CFA PM: <u>Cynde Larkins</u>	
Method of Shipment: <u>Fed Ex</u>	Date Shipped: <u>6-11-14</u>
Airbill #: <u>8042 3157 0745</u>	
Airbill #: <u> </u>	

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or- N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
5.8 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 6228
---------------------	-------------------------

Shipping Company: Fed Ex	Date/Time Received: 12 JUN 14 1000
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Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

Sample Receipt Criteria			Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?		<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other (describe)
2	Chain of Custody documents included with shipment?		<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?		<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 5.8°C
4	Aqueous samples found to have visible solids?			<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?			<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?			<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?		<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?		<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?		<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?		<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?		<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CD** Date: **12 JUN 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6228**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26174
Clean Up Batch Number: 26173
Extraction Batch Number: 26172

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6228001	SFRA-98
6228002	SFRA-99
12010679	Method Blank (MB)
12010680	Laboratory Control Sample (LCS)
12010681	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 26174.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. 6228001 (SFRA-98) and 6228002 (SFRA-99) - Batch 26174.

Sample Dilutions

Sample 6228002 (SFRA-99)- Batch 26174 was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6228 CFA Work Order: 6228


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 17 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6228	Client: TETR001	Project: TETR00114
Lab Sample ID: 6228001	Date Collected: 06/11/2014 15:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/12/2014 10:00	%Moisture: 20.6
Client ID: SFRA-98		Prep Basis: Dry Weight
Batch ID: 26174	Method: EPA Method 1613B	
Run Date: 06/16/2014 13:56	Analyst: JTF	Instrument: HRP750
Data File: A16JUN14A-3		Dilution: 1
Prep Batch: 26172	Prep Method: SW846 3540C	
Prep Date: 12-JUN-14	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3190	pg/g	1.40	12.2
40321-76-4	1,2,3,7,8-PeCDD	J	4.21	pg/g	1.35	61.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.38	pg/g	3.38	61.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	43.9	pg/g	3.47	61.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	15.7	pg/g	3.64	61.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		801	pg/g	6.48	61.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		20400	pg/g	31.8	122
51207-31-9	2,3,7,8-TCDF		20.1	pg/g	1.78	12.2
57117-41-6	1,2,3,7,8-PeCDF	J	3.30	pg/g	1.76	61.1
57117-31-4	2,3,4,7,8-PeCDF	J	5.53	pg/g	1.72	61.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	11.3	pg/g	1.97	61.1
57117-44-9	1,2,3,6,7,8-HxCDF	J	7.36	pg/g	2.01	61.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	10.1	pg/g	2.06	61.1
72918-21-9	1,2,3,7,8,9-HxCDF	J	4.94	pg/g	3.03	61.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		163	pg/g	2.33	61.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	15.9	pg/g	3.89	61.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		377	pg/g	4.55	122

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1840	2450	pg/g	75.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1910	2450	pg/g	78.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1930	2450	pg/g	78.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1870	2450	pg/g	76.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1980	2450	pg/g	81.0	(23%-140%)
13C-OCDD		3760	4890	pg/g	76.9	(17%-157%)
13C-2,3,7,8-TCDF		1950	2450	pg/g	79.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1960	2450	pg/g	80.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1960	2450	pg/g	80.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1920	2450	pg/g	78.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2450	pg/g	78.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2450	pg/g	78.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1750	2450	pg/g	71.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1880	2450	pg/g	76.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1750	2450	pg/g	71.4	(26%-138%)
37Cl-2,3,7,8-TCDD		207	245	pg/g	84.5	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6228	Client: TETR001	Project: TETR00114
Lab Sample ID: 6228001	Date Collected: 06/11/2014 15:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/12/2014 10:00	%Moisture: 20.6
Client ID: SFRA-98		Prep Basis: Dry Weight
Batch ID: 26174	Method: EPA Method 1613B	
Run Date: 06/17/2014 09:06	Analyst: JTF	Instrument: HRP763
Data File: b16jun14a-4		Dilution: 1
Prep Batch: 26172	Prep Method: SW846 3540C	
Prep Date: 12-JUN-14	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		19.0	pg/g	3.28	12.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6228	Client: TETR001	Project: TETR00114
Lab Sample ID: 6228002	Date Collected: 06/11/2014 15:10	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/12/2014 10:00	%Moisture: 23.5
Client ID: SFRA-99		Prep Basis: Dry Weight
Batch ID: 26174	Method: EPA Method 1613B	
Run Date: 06/16/2014 15:41	Analyst: JTF	Instrument: HRP750
Data File: A16JUN14A-5		Dilution: 5
Prep Batch: 26172	Prep Method: SW846 3540C	
Prep Date: 12-JUN-14	Prep Aliquot: 1.47 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3940	pg/g	7.17	44.5
40321-76-4	1,2,3,7,8-PeCDD	U	7.83	pg/g	7.83	222
39227-28-6	1,2,3,4,7,8-HxCDD	U	17.3	pg/g	17.3	222
57653-85-7	1,2,3,6,7,8-HxCDD	J	44.8	pg/g	17.7	222
19408-74-3	1,2,3,7,8,9-HxCDD	J	21.1	pg/g	18.7	222
35822-46-9	1,2,3,4,6,7,8-HpCDD		539	pg/g	19.6	222
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10600	pg/g	93.4	445
51207-31-9	2,3,7,8-TCDF	J	28.0	pg/g	6.83	44.5
57117-41-6	1,2,3,7,8-PeCDF	U	6.6	pg/g	6.60	222
57117-31-4	2,3,4,7,8-PeCDF	U	6.65	pg/g	6.65	222
70648-26-9	1,2,3,4,7,8-HxCDF	J	11.3	pg/g	6.23	222
57117-44-9	1,2,3,6,7,8-HxCDF	U	6.64	pg/g	6.64	222
60851-34-5	2,3,4,6,7,8-HxCDF	U	8.29	pg/g	8.29	222
72918-21-9	1,2,3,7,8,9-HxCDF	U	10.4	pg/g	10.4	222
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	150	pg/g	6.73	222
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	12.4	pg/g	11.4	222
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	212	pg/g	22.6	445

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1380	1780	pg/g	77.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1490	1780	pg/g	83.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1410	1780	pg/g	79.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1460	1780	pg/g	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1320	1780	pg/g	74.4	(23%-140%)
13C-OCDD		2270	3560	pg/g	63.7	(17%-157%)
13C-2,3,7,8-TCDF		1460	1780	pg/g	81.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1550	1780	pg/g	86.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1520	1780	pg/g	85.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1430	1780	pg/g	80.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1390	1780	pg/g	78.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1370	1780	pg/g	77.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1190	1780	pg/g	66.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1310	1780	pg/g	73.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1180	1780	pg/g	66.4	(26%-138%)
37Cl-2,3,7,8-TCDD		164	178	pg/g	92.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6228

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010680	LCS for batch 26172	13C-2,3,7,8-TCDD		77.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		83.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		83.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		82.7	(22%-166%)
		13C-OCDD		71.7	(13%-199%)
		13C-2,3,7,8-TCDF		83.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		88.1	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		81.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		84.2	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		82.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		72.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		80.1	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		74.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		83.1	(31%-191%)
		12010681	LCSD for batch 26172	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				79.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD				73.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD				80.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD				80.7	(22%-166%)
13C-OCDD				70.3	(13%-199%)
13C-2,3,7,8-TCDF				81.0	(22%-152%)
13C-1,2,3,7,8-PeCDF				81.2	(21%-192%)
13C-2,3,4,7,8-PeCDF				79.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF				77.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF				77.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF				76.6	(22%-176%)
13C-1,2,3,7,8,9-HxCDF				71.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF				79.7	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF				72.1	(20%-186%)
37Cl-2,3,7,8-TCDD				80.7	(31%-191%)
12010679	MB for batch 26172			13C-2,3,7,8-TCDD	
		13C-1,2,3,7,8-PeCDD		83.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.7	(23%-140%)
		13C-OCDD		73.4	(17%-157%)
		13C-2,3,7,8-TCDF		79.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		84.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		77.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		77.4	(35%-197%)
		6228001	SFRA-98	13C-2,3,7,8-TCDD	

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6228

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6228001	SFRA-98	13C-1,2,3,7,8-PeCDD		78.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		81.0	(23%-140%)
		13C-OCDD		76.9	(17%-157%)
		13C-2,3,7,8-TCDF		79.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		80.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		71.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		84.5	(35%-197%)
6228002	SFRA-99	13C-2,3,7,8-TCDD		77.4	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		83.8	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.3	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.9	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		74.4	D (23%-140%)
		13C-OCDD		63.7	D (17%-157%)
		13C-2,3,7,8-TCDF		81.8	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		86.9	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		85.6	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.1	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.2	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.2	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.6	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		73.8	D (28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		66.4	D (26%-138%)
37Cl-2,3,7,8-TCDD		92.3	D (35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6228

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26172

Matrix: SOLID

Lab Sample ID: 12010680

Instrument: HRP750

Analysis Date: 06/13/2014 19:06

Dilution: 1

Analyst: JTF

Prep Batch ID: 26172

Batch ID: 26174

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.8	109	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	106	106	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	104	104	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	105	105	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	109	109	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	99.6	99.6	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	204	102	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.3	96.7	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	102	102	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	101	101	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	100	100	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	101	101	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	102	102	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	106	106	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	98.8	98.8	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	98.1	98.1	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	191	95.3	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6228

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26172

Matrix: SOLID

Lab Sample ID: 12010681

Instrument: HRP750

Analysis Date: 06/13/2014 19:54

Dilution: 1

Analyst: JTF

Prep Batch ID: 26172

Batch ID: 26174

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.4	107	67-158	1.95	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	102	102	70-142	3.60	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	99.1	99.1	70-164	5.18	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	106	106	76-134	0.686	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	105	105	64-162	3.74	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	96.8	96.8	70-140	2.89	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	201	101	78-144	1.23	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	18.5	92.6	75-158	4.38	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	97.8	97.8	80-134	4.15	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	100	100	68-160	1.33	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	97.1	97.1	72-134	3.09	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	103	103	84-130	1.43	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	101	101	70-156	1.47	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	102	102	78-130	4.06	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	97.0	97	82-122	1.76	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	99.5	99.5	78-138	1.41	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	193	96.3	63-170	0.984	0-20

Method Blank Summary

SDG Number: 6228
Client ID: MB for batch 26172
Lab Sample ID: 12010679
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 12-JUN-14

Matrix: SOLID
Data File: A11JUN14A_6-3
Analyzed: 06/13/14 20:42

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26172	12010680	A11JUN14A_6-1	06/13/14	1906
02 LCSD for batch 26172	12010681	A11JUN14A_6-2	06/13/14	1954
03 SFRA-98	6228001	A16JUN14A-3	06/16/14	1356
04 SFRA-99	6228002	A16JUN14A-5	06/16/14	1541
05 SFRA-98	6228001	b16jun14a-4	06/17/14	0906

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6228	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010679		Matrix: SOLID
Client Sample: QC for batch 26172		
Client ID: MB for batch 26172		Prep Basis: As Received
Batch ID: 26174	Method: EPA Method 1613B	
Run Date: 06/13/2014 20:42	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_6-3		Dilution: 1
Prep Batch: 26172	Prep Method: SW846 3540C	
Prep Date: 12-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.0984	pg/g	0.0984	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.342	pg/g	0.342	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.464	pg/g	0.464	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.29	pg/g	0.290	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.408	pg/g	0.408	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.470	pg/g	0.288	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	1.83	pg/g	1.83	10.0
51207-31-9	2,3,7,8-TCDF	U	.092	pg/g	0.092	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.332	pg/g	0.332	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.312	pg/g	0.312	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.358	pg/g	0.358	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.322	pg/g	0.322	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.39	pg/g	0.390	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.408	pg/g	0.236	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.388	pg/g	0.153	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.462	pg/g	0.462	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.942	pg/g	0.570	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		146	200	pg/g	72.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		168	200	pg/g	83.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		148	200	pg/g	73.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		157	200	pg/g	78.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		161	200	pg/g	80.7	(23%-140%)
13C-OCDD		294	400	pg/g	73.4	(17%-157%)
13C-2,3,7,8-TCDF		158	200	pg/g	79.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		169	200	pg/g	84.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		168	200	pg/g	84.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		156	200	pg/g	78.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		155	200	pg/g	77.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		157	200	pg/g	78.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		141	200	pg/g	70.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		156	200	pg/g	78.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		154	200	pg/g	77.1	(26%-138%)
37Cl-2,3,7,8-TCDD		15.5	20.0	pg/g	77.4	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6228	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010680		Matrix: SOLID
Client Sample: QC for batch 26172		
Client ID: LCS for batch 26172		Prep Basis: As Received
Batch ID: 26174	Method: EPA Method 1613B	
Run Date: 06/13/2014 19:06	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_6-1		Dilution: 1
Prep Batch: 26172	Prep Method: SW846 3540C	
Prep Date: 12-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.8	pg/g	0.108	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.284	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		104	pg/g	0.660	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		105	pg/g	0.636	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		109	pg/g	0.688	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.6	pg/g	0.582	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		204	pg/g	1.62	10.0
51207-31-9	2,3,7,8-TCDF		19.3	pg/g	0.107	1.00
57117-41-6	1,2,3,7,8-PeCDF		102	pg/g	0.300	5.00
57117-31-4	2,3,4,7,8-PeCDF		101	pg/g	0.296	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		100	pg/g	0.682	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.694	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		102	pg/g	0.734	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		106	pg/g	1.13	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		98.8	pg/g	0.406	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		98.1	pg/g	0.704	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		191	pg/g	1.43	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		154	200	pg/g	77.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		167	200	pg/g	83.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		157	200	pg/g	78.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		167	200	pg/g	83.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		165	200	pg/g	82.7	(22%-166%)
13C-OCDD		287	400	pg/g	71.7	(13%-199%)
13C-2,3,7,8-TCDF		168	200	pg/g	83.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		176	200	pg/g	88.1	(21%-192%)
13C-2,3,4,7,8-PeCDF		171	200	pg/g	85.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		163	200	pg/g	81.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		168	200	pg/g	84.2	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		165	200	pg/g	82.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		146	200	pg/g	72.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		160	200	pg/g	80.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		149	200	pg/g	74.4	(20%-186%)
37Cl-2,3,7,8-TCDD		16.6	20.0	pg/g	83.1	(31%-191%)

Comments:**K Estimated Maximum Possible Concentration**

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6228	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010681		Matrix: SOLID
Client Sample: QC for batch 26172		
Client ID: LCSD for batch 26172		Prep Basis: As Received
Batch ID: 26174	Method: EPA Method 1613B	
Run Date: 06/13/2014 19:54	Analyst: JTF	Instrument: HRP750
Data File: A11JUN14A_6-2		Dilution: 1
Prep Batch: 26172	Prep Method: SW846 3540C	
Prep Date: 12-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.4	pg/g	0.111	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.208	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		99.1	pg/g	0.334	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		106	pg/g	0.366	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	0.372	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.8	pg/g	0.564	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		201	pg/g	1.16	10.0
51207-31-9	2,3,7,8-TCDF		18.5	pg/g	0.0912	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.8	pg/g	0.254	5.00
57117-31-4	2,3,4,7,8-PeCDF		100	pg/g	0.246	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		97.1	pg/g	0.420	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		103	pg/g	0.436	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		101	pg/g	0.440	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		102	pg/g	0.704	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.0	pg/g	0.486	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		99.5	pg/g	0.848	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		193	pg/g	0.988	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		146	200	pg/g	73.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		158	200	pg/g	79.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		146	200	pg/g	73.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	80.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		161	200	pg/g	80.7	(22%-166%)
13C-OCDD		281	400	pg/g	70.3	(13%-199%)
13C-2,3,7,8-TCDF		162	200	pg/g	81.0	(22%-152%)
13C-1,2,3,7,8-PeCDF		162	200	pg/g	81.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		158	200	pg/g	79.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		156	200	pg/g	77.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		153	200	pg/g	76.6	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		142	200	pg/g	71.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		159	200	pg/g	79.7	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		144	200	pg/g	72.1	(20%-186%)
37Cl-2,3,7,8-TCDD		16.1	20.0	pg/g	80.7	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

June 24, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6255

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 19, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number: 6255

Client Name: Tetra Tech Phone #: 314-517-6788 Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Station
 Address: 20 Jamestown Farm Dr, Florissant, Mo 63034
 Collected by: R Clayton Send Results To: dave.kinross@charter.net
rclayton@tetratech.com

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ^(a)	Field Filtered ^(b)	Sample Matrix ^(c)	Total number of containers											Preservative Type (6)	Comments Note: extra sample is required for sample specific QC	
							1	2	3	4	5	6	7	8	9	10			11
SFRA-100	06-17-14	1450			S	1	X												
SFRA-101	06-17-14	1500			S	1	Y												
SFRA-102	6-18-14	0905			S	1	X												
SFRA-103	6-18-14	0915			S	1	X												
SFRA-104	6-18-14	1400			S	1	X												

TAT Requested: Normal: Rush: Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Sample Collection Time Zone: Eastern Pacific Central Other Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>R Clayton</u>	<u>6-18-14</u>	<u>1430</u>	<u>Cynde Larkins</u>	<u>19 JUN 14</u>	<u>1005</u>

CFA PM: Cynde Larkins
 Method of Shipment: Fed Ex Date Shipped:
 Airbill #: 804231570756
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO

Cooler Temp:
4.9 C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6255
Shipping Company: Fed Ex	Date/Time Received: 18th 19 JUN 14 1005

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other (describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 4.9°C
4 Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CF** Date: **19 JUN 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6255**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26229
Clean Up Batch Number: 26228
Extraction Batch Number: 26227

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6255001	SFRA-100
6255002	SFRA-101
6255003	SFRA-102
6255004	SFRA-103
6255005	SFRA-104
12010730	Method Blank (MB)
12010731	Laboratory Control Sample (LCS)
12010732	Laboratory Control Sample Duplicate (LCSD)
12010733	6255002(SFRA-101) Matrix Spike (MS)
12010734	6255002(SFRA-101) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information**Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6255002 (SFRA-101) - Batch 26229 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike/Duplicate (MS/MSD) Recovery Statement

One MS recovery for this SDG was not within the acceptance limits. The failure confirms in the matrix spike duplicate and can be attributed to matrix interference. 12010733 (SFRA-101) and 12010734 (SFRA-101) - Batch 26229.

MS/MSD Relative Percent Difference (RPD) Statement

One relative percent difference (RPD) between the MS and MSD was not within the required acceptance limits. Sample data is validated based on acceptable LCS/LCSD results. 12010733 (SFRA-101) and 12010734 (SFRA-101) - Batch 26229.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26229.

Sample Dilutions

Samples 6255001 (SFRA-100) and 6255003 (SFRA-102)- Batch 26229 were diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Nonconformance (NCR) Documentation**

The following NCR was generated for this SDG: 644596 12010734 (SFRA-101)- Batch 26229.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6255 CFA Work Order: 6255


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 24 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 6255001	Date Collected: 06/17/2014 14:50	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/19/2014 10:05	%Moisture: 24.6
Client ID: SFRA-100		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 10:41	Analyst: JTF	Instrument: HRP750
Data File: A23JUN14A-3		Dilution: 10
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.47 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		13800	pg/g	9.42	90.2
40321-76-4	1,2,3,7,8-PeCDD	U	11.4	pg/g	11.4	451
39227-28-6	1,2,3,4,7,8-HxCDD	U	19.9	pg/g	19.9	451
57653-85-7	1,2,3,6,7,8-HxCDD	J	66.1	pg/g	20.0	451
19408-74-3	1,2,3,7,8,9-HxCDD	J	30.5	pg/g	21.1	451
35822-46-9	1,2,3,4,6,7,8-HpCDD		702	pg/g	16.9	451
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11200	pg/g	60.5	902
51207-31-9	2,3,7,8-TCDF	J	73.8	pg/g	13.6	90.2
57117-41-6	1,2,3,7,8-PeCDF	U	6.33	pg/g	6.33	451
57117-31-4	2,3,4,7,8-PeCDF	U	12.8	pg/g	12.8	451
70648-26-9	1,2,3,4,7,8-HxCDF	J	18.8	pg/g	8.34	451
57117-44-9	1,2,3,6,7,8-HxCDF	J	11.0	pg/g	7.98	451
60851-34-5	2,3,4,6,7,8-HxCDF	U	17.7	pg/g	17.7	451
72918-21-9	1,2,3,7,8,9-HxCDF	J	15.1	pg/g	14.7	451
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	250	pg/g	8.88	451
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	25.6	pg/g	18.4	451
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	324	pg/g	42.4	902

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1200	1800	pg/g	66.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1120	1800	pg/g	62.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1240	1800	pg/g	68.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1240	1800	pg/g	68.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1130	1800	pg/g	62.8	(23%-140%)
13C-OCDD		1360	3610	pg/g	37.6	(17%-157%)
13C-2,3,7,8-TCDF		1370	1800	pg/g	76.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1320	1800	pg/g	73.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1270	1800	pg/g	70.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1380	1800	pg/g	76.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1260	1800	pg/g	69.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1250	1800	pg/g	69.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1010	1800	pg/g	56.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1240	1800	pg/g	68.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		975	1800	pg/g	54.0	(26%-138%)
37Cl-2,3,7,8-TCDD		181	180	pg/g	100	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 6255002	Date Collected: 06/17/2014 15:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/19/2014 10:05	%Moisture: 22.2
Client ID: SFRA-101		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 12:22	Analyst: JTF	Instrument: HRP750
Data File: A23JUN14A-5		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3030	pg/g	1.89	12.6
40321-76-4	1,2,3,7,8-PeCDD	J	2.09	pg/g	1.50	63.0
39227-28-6	1,2,3,4,7,8-HxCDD	J	6.30	pg/g	2.87	63.0
57653-85-7	1,2,3,6,7,8-HxCDD	J	33.2	pg/g	2.95	63.0
19408-74-3	1,2,3,7,8,9-HxCDD	J	11.4	pg/g	3.10	63.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		421	pg/g	4.79	63.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8830	pg/g	20.7	126
51207-31-9	2,3,7,8-TCDF		18.1	pg/g	2.09	12.6
57117-41-6	1,2,3,7,8-PeCDF	J	2.65	pg/g	1.68	63.0
57117-31-4	2,3,4,7,8-PeCDF	J	4.16	pg/g	1.78	63.0
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.63	pg/g	1.37	63.0
57117-44-9	1,2,3,6,7,8-HxCDF	J	4.46	pg/g	1.39	63.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	6.83	pg/g	6.83	63.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.32	pg/g	2.32	63.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		121	pg/g	1.85	63.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	7.36	pg/g	7.36	63.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		175	pg/g	6.70	126

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1750	2520	pg/g	69.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1710	2520	pg/g	67.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1810	2520	pg/g	72.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1710	2520	pg/g	67.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1720	2520	pg/g	68.2	(23%-140%)
13C-OCDD		2230	5040	pg/g	44.2	(17%-157%)
13C-2,3,7,8-TCDF		1910	2520	pg/g	75.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1780	2520	pg/g	70.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1760	2520	pg/g	70.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1870	2520	pg/g	74.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1740	2520	pg/g	69.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1750	2520	pg/g	69.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1520	2520	pg/g	60.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1750	2520	pg/g	69.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1440	2520	pg/g	57.0	(26%-138%)
37Cl-2,3,7,8-TCDD		216	252	pg/g	85.7	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 6255002	Date Collected: 06/17/2014 15:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/19/2014 10:05	%Moisture: 22.2
Client ID: SFRA-101		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 16:20	Analyst: JTF	Instrument: HRP763
Data File: b23jun14a-4		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		19.4	pg/g	2.62	12.6

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 6255003	Date Collected: 06/18/2014 09:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/19/2014 10:05	%Moisture: 22.8
Client ID: SFRA-102		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 14:50	Analyst: JTF	Instrument: HRP750
Data File: A23JUN14A-8		Dilution: 5
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.59 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3920	pg/g	4.66	40.8
40321-76-4	1,2,3,7,8-PeCDD	J	10.7	pg/g	5.07	204
39227-28-6	1,2,3,4,7,8-HxCDD	J	10.5	pg/g	6.72	204
57653-85-7	1,2,3,6,7,8-HxCDD	J	24.8	pg/g	6.94	204
19408-74-3	1,2,3,7,8,9-HxCDD	J	16.9	pg/g	7.25	204
35822-46-9	1,2,3,4,6,7,8-HpCDD		263	pg/g	11.3	204
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6660	pg/g	143	408
51207-31-9	2,3,7,8-TCDF	J	22.6	pg/g	4.42	40.8
57117-41-6	1,2,3,7,8-PeCDF	J	6.81	pg/g	3.36	204
57117-31-4	2,3,4,7,8-PeCDF	J	10.5	pg/g	3.46	204
70648-26-9	1,2,3,4,7,8-HxCDF	J	13.3	pg/g	6.46	204
57117-44-9	1,2,3,6,7,8-HxCDF	J	9.24	pg/g	6.54	204
60851-34-5	2,3,4,6,7,8-HxCDF	J	11.5	pg/g	7.21	204
72918-21-9	1,2,3,7,8,9-HxCDF	J	15.1	pg/g	12.2	204
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	76.4	pg/g	4.39	204
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	24.6	pg/g	24.6	204
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	142	pg/g	28.2	408

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1390	1630	pg/g	85.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1390	1630	pg/g	85.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1450	1630	pg/g	88.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1460	1630	pg/g	89.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1120	1630	pg/g	68.5	(23%-140%)
13C-OCDD		1020	3260	pg/g	31.3	(17%-157%)
13C-2,3,7,8-TCDF		1550	1630	pg/g	95.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1520	1630	pg/g	93.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1500	1630	pg/g	92.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1640	1630	pg/g	101	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1530	1630	pg/g	93.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1460	1630	pg/g	89.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1180	1630	pg/g	72.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1290	1630	pg/g	78.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		839	1630	pg/g	51.4	(26%-138%)
37Cl-2,3,7,8-TCDD		176	163	pg/g	108	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 6255004	Date Collected: 06/18/2014 09:15	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/19/2014 10:05	%Moisture: 21.8
Client ID: SFRA-103		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 15:38	Analyst: JTF	Instrument: HRP750
Data File: A23JUN14A-9		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.12 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3090	pg/g	1.48	11.4
40321-76-4	1,2,3,7,8-PeCDD	U	3.63	pg/g	3.63	57.1
39227-28-6	1,2,3,4,7,8-HxCDD	J	5.85	pg/g	2.06	57.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	34.2	pg/g	2.12	57.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	11.8	pg/g	2.22	57.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		332	pg/g	3.52	57.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7750	pg/g	15.2	114
51207-31-9	2,3,7,8-TCDF		15.7	pg/g	1.63	11.4
57117-41-6	1,2,3,7,8-PeCDF	J	2.56	pg/g	1.02	57.1
57117-31-4	2,3,4,7,8-PeCDF	J	4.11	pg/g	1.01	57.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	7.54	pg/g	1.35	57.1
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.14	pg/g	1.42	57.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	8.22	pg/g	1.42	57.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.91	pg/g	3.91	57.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		115	pg/g	1.53	57.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	5.12	pg/g	5.12	57.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	109	pg/g	8.77	114

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1960	2280	pg/g	86.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1950	2280	pg/g	85.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1980	2280	pg/g	86.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1890	2280	pg/g	83.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1800	2280	pg/g	78.8	(23%-140%)
13C-OCDD		2520	4570	pg/g	55.2	(17%-157%)
13C-2,3,7,8-TCDF		2140	2280	pg/g	93.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		2030	2280	pg/g	88.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1980	2280	pg/g	86.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1990	2280	pg/g	87.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1910	2280	pg/g	83.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2280	pg/g	83.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1680	2280	pg/g	73.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1840	2280	pg/g	80.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1580	2280	pg/g	69.3	(26%-138%)
37Cl-2,3,7,8-TCDD		247	228	pg/g	108	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 6255004	Date Collected: 06/18/2014 09:15	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/19/2014 10:05	%Moisture: 21.8
Client ID: SFRA-103		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 17:18	Analyst: JTF	Instrument: HRP763
Data File: b23jun14a-7		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.12 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		20.8	pg/g	3.22	11.4

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 6255005	Date Collected: 06/18/2014 14:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/19/2014 10:05	%Moisture: 20.9
Client ID: SFRA-104		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 16:26	Analyst: JTF	Instrument: HRP750
Data File: A23JUN14A-10		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.14 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		610	pg/g	1.98	11.1
40321-76-4	1,2,3,7,8-PeCDD	U	2.16	pg/g	2.16	55.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	4.39	pg/g	4.39	55.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	7.87	pg/g	3.52	55.4
19408-74-3	1,2,3,7,8,9-HxCDD	U	4.57	pg/g	4.57	55.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		164	pg/g	7.20	55.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6410	pg/g	57.4	111
51207-31-9	2,3,7,8-TCDF	J	3.77	pg/g	2.75	11.1
57117-41-6	1,2,3,7,8-PeCDF	U	2.46	pg/g	2.46	55.4
57117-31-4	2,3,4,7,8-PeCDF	U	2.53	pg/g	2.53	55.4
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.15	pg/g	2.15	55.4
57117-44-9	1,2,3,6,7,8-HxCDF	J	2.06	pg/g	1.63	55.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.04	pg/g	2.04	55.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.39	pg/g	3.39	55.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	21.3	pg/g	21.3	55.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	6.05	pg/g	6.05	55.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	50.6	pg/g	31.5	111

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1770	2220	pg/g	79.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1760	2220	pg/g	79.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1840	2220	pg/g	83.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1860	2220	pg/g	84.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1300	2220	pg/g	58.7	(23%-140%)
13C-OCDD		1810	4430	pg/g	40.9	(17%-157%)
13C-2,3,7,8-TCDF		1980	2220	pg/g	89.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1950	2220	pg/g	87.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1940	2220	pg/g	87.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2190	2220	pg/g	98.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2070	2220	pg/g	93.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2220	pg/g	86.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1550	2220	pg/g	70.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1450	2220	pg/g	65.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1170	2220	pg/g	52.7	(26%-138%)
37Cl-2,3,7,8-TCDD		230	222	pg/g	104	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6255

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010731	LCS for batch 26227	13C-2,3,7,8-TCDD		70.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		75.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		61.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		76.1	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		70.0	(22%-166%)
		13C-OCDD		43.0	(13%-199%)
		13C-2,3,7,8-TCDF		77.9	(22%-152%)
		13C-1,2,3,7,8-PeCDF		81.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		81.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		62.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		74.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		64.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		53.0	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		75.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		53.0	(20%-186%)
		37Cl-2,3,7,8-TCDD		86.9	(31%-191%)
12010732	LCSD for batch 26227	13C-2,3,7,8-TCDD		67.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		75.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		62.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		83.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		58.9	(22%-166%)
		13C-OCDD		44.7	(13%-199%)
		13C-2,3,7,8-TCDF		77.0	(22%-152%)
		13C-1,2,3,7,8-PeCDF		83.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		79.0	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		68.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		81.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		72.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		56.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		65.4	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		47.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		84.1	(31%-191%)
12010730	MB for batch 26227	13C-2,3,7,8-TCDD		71.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		66.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		56.7	(23%-140%)
		13C-OCDD		31.1	(17%-157%)
		13C-2,3,7,8-TCDF		77.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		81.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		73.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		55.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		65.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		44.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		87.9	(35%-197%)
6255001	SFRA-100	13C-2,3,7,8-TCDD		66.6	D (25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6255

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6255001	SFRA-100	13C-1,2,3,7,8-PeCDD		62.3 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		68.7 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		68.6 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		62.8 D	(23%-140%)
		13C-OCDD		37.6 D	(17%-157%)
		13C-2,3,7,8-TCDF		76.2 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		73.0 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		70.3 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.2 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.8 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		69.4 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		56.0 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		68.7 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		54.0 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		100 D	(35%-197%)
		6255002	SFRA-101	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				67.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				72.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				67.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				68.2	(23%-140%)
13C-OCDD				44.2	(17%-157%)
13C-2,3,7,8-TCDF				75.7	(24%-169%)
13C-1,2,3,7,8-PeCDF				70.8	(24%-185%)
13C-2,3,4,7,8-PeCDF				70.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				74.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				69.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				69.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				60.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				69.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				57.0	(26%-138%)
37Cl-2,3,7,8-TCDD				85.7	(35%-197%)
12010733	SFRA-101(6255002MS)	13C-2,3,7,8-TCDD		70.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		71.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		70.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		69.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		66.1	(23%-140%)
		13C-OCDD		43.2	(17%-157%)
		13C-2,3,7,8-TCDF		75.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		74.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		73.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		68.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		70.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		60.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		68.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		56.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		85.5	(35%-197%)
12010734	SFRA-101(6255002MSD)	13C-2,3,7,8-TCDD		86.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		92.0	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6255

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010734	SFRA-101(6255002MSD)	13C-1,2,3,4,7,8-HxCDD		85.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		82.8	(23%-140%)
		13C-OCDD		56.3	(17%-157%)
		13C-2,3,7,8-TCDF		94.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		89.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		75.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		109	(35%-197%)
		6255003	SFRA-102	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				85.5	D (25%-181%)
13C-1,2,3,4,7,8-HxCDD				88.6	D (32%-141%)
13C-1,2,3,6,7,8-HxCDD				89.4	D (28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				68.5	D (23%-140%)
13C-OCDD				31.3	D (17%-157%)
13C-2,3,7,8-TCDF				95.1	D (24%-169%)
13C-1,2,3,7,8-PeCDF				93.3	D (24%-185%)
13C-2,3,4,7,8-PeCDF				92.0	D (21%-178%)
13C-1,2,3,4,7,8-HxCDF				101	D (26%-152%)
13C-1,2,3,6,7,8-HxCDF				93.9	D (26%-123%)
13C-2,3,4,6,7,8-HxCDF				89.8	D (28%-136%)
13C-1,2,3,7,8,9-HxCDF				72.3	D (29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				78.8	D (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				51.4	D (26%-138%)
37Cl-2,3,7,8-TCDD		108	D (35%-197%)		
6255004	SFRA-103	13C-2,3,7,8-TCDD		86.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		85.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		78.8	(23%-140%)
		13C-OCDD		55.2	(17%-157%)
		13C-2,3,7,8-TCDF		93.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		88.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		87.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		73.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		69.3	(26%-138%)
37Cl-2,3,7,8-TCDD		108	(35%-197%)		
6255005	SFRA-104	13C-2,3,7,8-TCDD		79.8	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.2	(32%-141%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6255

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6255005	SFRA-104	13C-1,2,3,6,7,8-HxCDD		84.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		58.7	(23%-140%)
		13C-OCDD		40.9	(17%-157%)
		13C-2,3,7,8-TCDF		89.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		98.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		93.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		65.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		52.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		104	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6255

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26227

Matrix: SOLID

Lab Sample ID: 12010731

Instrument: HRP750

Analysis Date: 06/20/2014 15:31

Dilution: 1

Analyst: JTF

Prep Batch ID: 26227

Batch ID: 26229

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	23.4	117	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	107	107	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	104	104	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	104	104	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	100	100	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	217	109	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.5	97.3	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	97.1	97.1	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	97.2	97.2	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	105	105	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	106	106	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	104	104	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	111	111	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	96.0	96	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	104	104	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	181	90.6	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6255
Client ID: LCSD for batch 26227
Lab Sample ID: 12010732
Instrument: HRP750
Analyst: JTF

Sample Type: Laboratory Control Sample Duplicate
Matrix: SOLID
Analysis Date: 06/20/2014 16:19
Prep Batch ID: 26227
Batch ID: 26229
Dilution: 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	22.9	114	67-158	2.04	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	102	102	70-142	4.31	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	108	108	70-164	3.99	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	105	105	76-134	1.18	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	106	106	64-162	5.67	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	99.3	99.3	70-140	1.48	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	203	101	78-144	7.04	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.6	97.9	75-158	0.615	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	93.8	93.8	80-134	3.49	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	98.1	98.1	68-160	0.993	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	103	103	72-134	2.73	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	101	101	84-130	4.24	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	99.3	99.3	70-156	4.30	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	101	101	78-130	9.38	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	100	100	82-122	4.48	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	94.9	94.9	78-138	9.01	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	180	90.2	63-170	0.485	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6255
Client ID: SFRA-101(6255002MS)
Lab Sample ID: 12010733
Instrument: HRP750
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 22.2
Analysis Date: 06/23/2014 13:09
Prep Batch ID: 26227
Batch ID: 26229
Dilution: 1

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits
		pg/g		pg/g		
1746-01-6	MS	2,3,7,8-TCDD	254	1920	-439 *	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	1270	J 1370	108	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	1270	J 1390	109	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	1270	J 1350	103	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	1270	J 1350	105	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	1270	1770	106	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	2540	11600	109	70-130
51207-31-9	MS	2,3,7,8-TCDF	254	260	95	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	1270	J 1350	106	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	1270	J 1350	106	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	1270	J 1350	106	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	1270	J 1400	110	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	1270	U 1350	106	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	1270	U 1440	113	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	1270	1440	104	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	1270	U 1340	105	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	2540	2660	97.7	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6255	Sample Type: Matrix Spike Duplicate
Client ID: SFRA-101(6255002MSD)	Matrix: SOLID
Lab Sample ID: 12010734	%Moisture: 22.2
Instrument: HRP750	Analysis Date: 06/23/2014 13:58
Analyst: JTF	Dilution: 1
	Prep Batch ID: 26227
	Batch ID: 26229

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	247		977	-832 *	70-130	65.0 *	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1240	J	1320	107	70-130	3.90	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1240	J	1310	105	70-130	6.23	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1240	J	1370	109	70-130	1.95	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1240	J	1360	109	70-130	0.700	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1240		1790	110	70-130	0.872	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2470		11300	100	70-130	2.51	0-20
51207-31-9	MSD 2,3,7,8-TCDF	247		255	95.8	70-130	1.92	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1240	J	1350	109	70-130	0.189	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1240	J	1320	106	70-130	2.37	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1240	J	1320	106	70-130	2.45	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1240	J	1370	110	70-130	2.52	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1240	U	1350	109	70-130	0.168	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1240	U	1400	114	70-130	2.80	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1240		1400	104	70-130	2.89	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1240	U	1300	105	70-130	3.27	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2470		2720	103	70-130	2.34	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6255
Client ID: SFRA-101(6255002MS)
Lab Sample ID: 12010733
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 22.2
Analysis Date: 06/23/2014 16:39 Dilution: 1
Prep Batch ID:26227
Batch ID: 26229

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
51207-31-9	MS 2,3,7,8-TCDF	254	295	108	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6255	Sample Type: Matrix Spike Duplicate
Client ID: SFRA-101(6255002MSD)	Matrix: SOLID
Lab Sample ID: 12010734	%Moisture: 22.2
Instrument: HRP763	Analysis Date: 06/23/2014 16:59
Analyst: JTF	Dilution: 1
	Prep Batch ID: 26227
	Batch ID: 26229

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
51207-31-9	MSD 2,3,7,8-TCDF	247	273	103	70-130	7.76	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6255
Client ID: MB for batch 26227
Lab Sample ID: 12010730
Column:

Client: TETR001
Instrument ID: HRP750
Prep Date: 19-JUN-14

Matrix: SOLID
Data File: A17JUN14C_8-5
Analyzed: 06/20/14 17:07

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26227	12010731	A17JUN14C_8-3	06/20/14	1531
02 LCSD for batch 26227	12010732	A17JUN14C_8-4	06/20/14	1619
03 SFRA-100	6255001	A23JUN14A-3	06/23/14	1041
04 SFRA-101	6255002	A23JUN14A-5	06/23/14	1222
05 SFRA-101(6255002MS)	12010733	A23JUN14A-6	06/23/14	1309
06 SFRA-101(6255002MSD)	12010734	A23JUN14A-7	06/23/14	1358
07 SFRA-102	6255003	A23JUN14A-8	06/23/14	1450
08 SFRA-103	6255004	A23JUN14A-9	06/23/14	1538
09 SFRA-101	6255002	b23jun14a-4	06/23/14	1620
10 SFRA-104	6255005	A23JUN14A-10	06/23/14	1626
11 SFRA-101(6255002MS)	12010733	b23jun14a-5	06/23/14	1639
12 SFRA-101(6255002MSD)	12010734	b23jun14a-6	06/23/14	1659
13 SFRA-103	6255004	b23jun14a-7	06/23/14	1718

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010730		Matrix: SOLID
Client Sample: QC for batch 26227		
Client ID: MB for batch 26227		Prep Basis: As Received
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/20/2014 17:07	Analyst: JTF	Instrument: HRP750
Data File: A17JUN14C_8-5		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.198	pg/g	0.198	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.29	pg/g	0.290	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.36	pg/g	0.360	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.398	pg/g	0.398	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.480	pg/g	0.382	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.64	pg/g	0.640	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	2.46	pg/g	2.46	10.0
51207-31-9	2,3,7,8-TCDF	U	.266	pg/g	0.266	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.228	pg/g	0.228	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	0.244	pg/g	0.198	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.394	pg/g	0.394	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.364	pg/g	0.364	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.432	pg/g	0.432	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.784	pg/g	0.784	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.354	pg/g	0.354	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.686	pg/g	0.686	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.82	pg/g	1.82	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		142	200	pg/g	71.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		158	200	pg/g	79.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		132	200	pg/g	66.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	77.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		113	200	pg/g	56.7	(23%-140%)
13C-OCDD		125	400	pg/g	31.1	(17%-157%)
13C-2,3,7,8-TCDF		155	200	pg/g	77.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		170	200	pg/g	85.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		163	200	pg/g	81.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		141	200	pg/g	70.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		166	200	pg/g	83.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		146	200	pg/g	73.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		111	200	pg/g	55.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		131	200	pg/g	65.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		88.8	200	pg/g	44.4	(26%-138%)
37Cl-2,3,7,8-TCDD		17.6	20.0	pg/g	87.9	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010731		Matrix: SOLID
Client Sample: QC for batch 26227		
Client ID: LCS for batch 26227		Prep Basis: As Received
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/20/2014 15:31	Analyst: JTF	Instrument: HRP750
Data File: A17JUN14C_8-3		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		23.4	pg/g	0.272	1.00
40321-76-4	1,2,3,7,8-PeCDD		107	pg/g	0.756	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		104	pg/g	1.13	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		104	pg/g	1.07	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		100	pg/g	1.16	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	2.36	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		217	pg/g	9.08	10.0
51207-31-9	2,3,7,8-TCDF		19.5	pg/g	0.332	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.1	pg/g	0.660	5.00
57117-31-4	2,3,4,7,8-PeCDF		97.2	pg/g	0.622	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		105	pg/g	1.42	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		106	pg/g	1.25	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		104	pg/g	1.51	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		111	pg/g	2.58	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		96.0	pg/g	1.39	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		104	pg/g	2.94	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	6.82	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		142	200	pg/g	70.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		150	200	pg/g	75.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		122	200	pg/g	61.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		152	200	pg/g	76.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		140	200	pg/g	70.0	(22%-166%)
13C-OCDD		172	400	pg/g	43.0	(13%-199%)
13C-2,3,7,8-TCDF		156	200	pg/g	77.9	(22%-152%)
13C-1,2,3,7,8-PeCDF		163	200	pg/g	81.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		164	200	pg/g	81.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		125	200	pg/g	62.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		148	200	pg/g	74.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		129	200	pg/g	64.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		106	200	pg/g	53.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		150	200	pg/g	75.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		106	200	pg/g	53.0	(20%-186%)
37Cl-2,3,7,8-TCDD		17.4	20.0	pg/g	86.9	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010732		Matrix: SOLID
Client Sample: QC for batch 26227		
Client ID: LCSD for batch 26227		Prep Basis: As Received
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/20/2014 16:19	Analyst: JTF	Instrument: HRP750
Data File: A17JUN14C_8-4		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		22.9	pg/g	0.314	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.762	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		108	pg/g	1.59	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		105	pg/g	1.61	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		106	pg/g	1.69	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		99.3	pg/g	1.90	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		203	pg/g	6.28	10.0
51207-31-9	2,3,7,8-TCDF		19.6	pg/g	0.332	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.8	pg/g	0.644	5.00
57117-31-4	2,3,4,7,8-PeCDF		98.1	pg/g	0.646	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		103	pg/g	1.63	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	1.59	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		99.3	pg/g	1.83	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		101	pg/g	3.58	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		100	pg/g	1.48	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		94.9	pg/g	2.76	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		180	pg/g	5.24	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		135	200	pg/g	67.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		151	200	pg/g	75.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		125	200	pg/g	62.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		166	200	pg/g	83.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		118	200	pg/g	58.9	(22%-166%)
13C-OCDD		179	400	pg/g	44.7	(13%-199%)
13C-2,3,7,8-TCDF		154	200	pg/g	77.0	(22%-152%)
13C-1,2,3,7,8-PeCDF		166	200	pg/g	83.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		158	200	pg/g	79.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		137	200	pg/g	68.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		162	200	pg/g	81.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		145	200	pg/g	72.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		112	200	pg/g	56.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		131	200	pg/g	65.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		94.5	200	pg/g	47.3	(20%-186%)
37Cl-2,3,7,8-TCDD		16.8	20.0	pg/g	84.1	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010733	Date Collected: 06/17/2014 15:00	Matrix: SOLID
Client Sample: QC for batch 26227	Date Received: 06/19/2014 10:05	%Moisture: 22.2
Client ID: SFRA-101(6255002MS)		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 13:09	Analyst: JTF	Instrument: HRP750
Data File: A23JUN14A-6		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1920	pg/g	1.55	12.7
40321-76-4	1,2,3,7,8-PeCDD		1370	pg/g	2.47	63.6
39227-28-6	1,2,3,4,7,8-HxCDD		1390	pg/g	3.51	63.6
57653-85-7	1,2,3,6,7,8-HxCDD		1350	pg/g	3.66	63.6
19408-74-3	1,2,3,7,8,9-HxCDD		1350	pg/g	3.82	63.6
35822-46-9	1,2,3,4,6,7,8-HpCDD		1770	pg/g	6.34	63.6
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11600	pg/g	20.5	127
51207-31-9	2,3,7,8-TCDF		260	pg/g	2.75	12.7
57117-41-6	1,2,3,7,8-PeCDF		1350	pg/g	2.70	63.6
57117-31-4	2,3,4,7,8-PeCDF		1350	pg/g	2.80	63.6
70648-26-9	1,2,3,4,7,8-HxCDF		1350	pg/g	4.63	63.6
57117-44-9	1,2,3,6,7,8-HxCDF		1400	pg/g	4.53	63.6
60851-34-5	2,3,4,6,7,8-HxCDF		1350	pg/g	4.78	63.6
72918-21-9	1,2,3,7,8,9-HxCDF		1440	pg/g	7.79	63.6
67562-39-4	1,2,3,4,6,7,8-HpCDF		1440	pg/g	4.25	63.6
55673-89-7	1,2,3,4,7,8,9-HpCDF		1340	pg/g	8.52	63.6
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2660	pg/g	12.8	127

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1780	2540	pg/g	70.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1820	2540	pg/g	71.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1800	2540	pg/g	70.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1770	2540	pg/g	69.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1680	2540	pg/g	66.1	(23%-140%)
13C-OCDD		2200	5090	pg/g	43.2	(17%-157%)
13C-2,3,7,8-TCDF		1930	2540	pg/g	75.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1880	2540	pg/g	74.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1880	2540	pg/g	73.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1880	2540	pg/g	74.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1730	2540	pg/g	68.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1800	2540	pg/g	70.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1540	2540	pg/g	60.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1750	2540	pg/g	68.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1440	2540	pg/g	56.5	(26%-138%)
37Cl-2,3,7,8-TCDD		217	254	pg/g	85.5	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010733	Date Collected: 06/17/2014 15:00	Matrix: SOLID
Client Sample: QC for batch 26227	Date Received: 06/19/2014 10:05	%Moisture: 22.2
Client ID: SFRA-101(6255002MS)		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 16:39	Analyst: JTF	Instrument: HRP763
Data File: b23jun14a-5		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		295	pg/g	2.67	12.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010734	Date Collected: 06/17/2014 15:00	Matrix: SOLID
Client Sample: QC for batch 26227	Date Received: 06/19/2014 10:05	%Moisture: 22.2
Client ID: SFRA-101(6255002MSD)		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 13:58	Analyst: JTF	Instrument: HRP750
Data File: A23JUN14A-7		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		977	pg/g	1.21	12.4
40321-76-4	1,2,3,7,8-PeCDD		1320	pg/g	1.93	61.8
39227-28-6	1,2,3,4,7,8-HxCDD		1310	pg/g	3.29	61.8
57653-85-7	1,2,3,6,7,8-HxCDD		1370	pg/g	3.43	61.8
19408-74-3	1,2,3,7,8,9-HxCDD		1360	pg/g	3.56	61.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		1790	pg/g	4.92	61.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11300	pg/g	15.3	124
51207-31-9	2,3,7,8-TCDF		255	pg/g	2.69	12.4
57117-41-6	1,2,3,7,8-PeCDF		1350	pg/g	2.77	61.8
57117-31-4	2,3,4,7,8-PeCDF		1320	pg/g	2.87	61.8
70648-26-9	1,2,3,4,7,8-HxCDF		1320	pg/g	3.88	61.8
57117-44-9	1,2,3,6,7,8-HxCDF		1370	pg/g	3.98	61.8
60851-34-5	2,3,4,6,7,8-HxCDF		1350	pg/g	4.27	61.8
72918-21-9	1,2,3,7,8,9-HxCDF		1400	pg/g	6.45	61.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		1400	pg/g	2.46	61.8
55673-89-7	1,2,3,4,7,8,9-HpCDF		1300	pg/g	4.30	61.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2720	pg/g	8.92	124

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2140	2470	pg/g	86.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		2270	2470	pg/g	92.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2120	2470	pg/g	85.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2070	2470	pg/g	83.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2050	2470	pg/g	82.8	(23%-140%)
13C-OCDD		2780	4940	pg/g	56.3	(17%-157%)
13C-2,3,7,8-TCDF		2330	2470	pg/g	94.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2340	2470	pg/g	94.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		2320	2470	pg/g	93.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2220	2470	pg/g	89.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2050	2470	pg/g	83.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2090	2470	pg/g	84.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1860	2470	pg/g	75.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2030	2470	pg/g	82.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1820	2470	pg/g	73.7	(26%-138%)
37Cl-2,3,7,8-TCDD		270	247	pg/g	109	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6255	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010734	Date Collected: 06/17/2014 15:00	Matrix: SOLID
Client Sample: QC for batch 26227	Date Received: 06/19/2014 10:05	%Moisture: 22.2
Client ID: SFRA-101(6255002MSD)		Prep Basis: Dry Weight
Batch ID: 26229	Method: EPA Method 1613B	
Run Date: 06/23/2014 16:59	Analyst: JTF	Instrument: HRP763
Data File: b23jun14a-6		Dilution: 1
Prep Batch: 26227	Prep Method: SW846 3540C	
Prep Date: 19-JUN-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		273	pg/g	2.52	12.4

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

June 30, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6275

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 24, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of _____
 Project #: _____
 CFA Quote #: _____
 COC Number ⁽¹⁾: _____
 PO Number: _____

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number: 6275
 Client Name: Tetra Tech Phone #: 910-908-4649

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action Fax #: _____
 Address: 20 Jamestown Farm DR Florissant Mo 63031
 Collected by: R Clayton Send Results To: dave.kentofh@charter.net
rclayton@seaguilenvirotech.com

<-- Preservative Type (6)

Comments
 Note: extra sample is required for sample specific QC

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers												
SFRA-105	6-18-14	1400			S	1	1	1										
SFRA-106	6-20-14	1111			S	1	1	1										
SFRA-107	6-20-14	1116			S	1	1	1										
SFRA-108	6-20-14	1121			S	1	1	1										
SFRA-109	6-20-14	1305			S	1	1	1										
SFRA-110	6-20-14	1525			S	1	1	1										
SFRA-111	6-23-14	1340			S	1	1	1										
SFRA-112	6-23-14	1405			S	1	1	1										
SFRA-113	6-23-14	1714			S	1	1	1										
SFRA-114	6-23-14	1740			S	1	1	1										

TAT Requested: Normal: Rush: Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Sample Collection Time Zone: Eastern Pacific Central Other Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>R Clayton</u>	<u>6-23-14</u>	<u>1820</u>	<u>Cynde Larking</u>	<u>24-JUN-14</u>	<u>1450</u>
			CFA PM: <u>Cynde Larking</u>		
			Method of Shipment: <u>Fed Ex</u>		Date Shipped:
			Airbill #: <u>8042 3157-0767</u>		
			Airbill #:		

- 1.) Chain of Custody Number = Client Determined
- 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- 3.) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- 4.) Matrix Codes: DW=Drinking Water, GW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Feecal, N=Nasal
- 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
 Custody Seal Intact?
 YES NO
 Cooler Temp:
4.3 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST
Cope Fear Analytical

Client: TEAR Work Order: 6275

Shipping Company: FedEx Date/Time Received: 24 JUN 14 1450

Suspected Hazard Information	Yes	NA	No	DOE Site Sample Packages	Yes	NA	No*
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>	Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>	Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other (describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: (ice bags) blue ice dry ice none other (describe) <u>4.30C</u>
4 Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?			<input checked="" type="checkbox"/>	Sample IDs, containers affected: <u>Collection times are off - see below</u>
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:			
ID	SFRA	COC time	label time
105		1400	1111
106		1111	1116
107		1116	1121
108		1121	1210
111		1340	<u>CP</u> <u>24 JUN 14 1338</u>
112		1405	1340

Checklist performed by: Initials: CL Date: 24 JUN 14

Subject: Re: Collection time verifications

From: "rclaytor@seagullenvirotech.com" <rclaytor@seagullenvirotech.com>

Date: 6/24/2014 5:13 PM

To: Cynde Larkins <cynde.larkins@cfanalytical.com>

I have indicated the correct sample time for the requested samples. Thank you.

On June 24, 2014 at 2:40 PM Cynde Larkins <cynde.larkins@cfanalytical.com> wrote:

Mr. Kinroth,

CFA received the 10 soil samples today for rush turnaround in good condition and within temperature. There are several collection time discrepancies I am hoping you can let me know which times to use.

Sample ID	Collection time on COC	Collection time on Label
SFRA-105	1400	1111 Correct
SFRA-106	1111	1116 Correct
SFRA-107	1116	1121 Correct
SFRA-108	1121	1210 Correct
SFRA-111	1340	1338 1335 Corect
SFRA-112	1405	1340 Correct

Thank you,

--

Cynde Larkins
 Project Manager Assistant
 Cape Fear Analytical
 3306 Kitty Hawk Road
 Suite 120
 Wilmington, NC 28405
 (910) 795-0421

How was your customer experience? Customer service is a high priority for us, so we listen to what our customers have to say! Thank you for taking time to email us your thoughts and opinions at feedback@cfanalytical.com

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Rick Claytor, CHMM
Sr. Environmental Scientist
Seagull Environmental Technologies, Inc.
Woman-Owned, 8(a) Firm
email: rclaytor@seagullenvirotech.com

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6275**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26279
Clean Up Batch Number: 26278
Extraction Batch Number: 26277

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6275001	SFRA-105
6275002	SFRA-106
6275003	SFRA-107
6275004	SFRA-108
6275005	SFRA-109
6275006	SFRA-110
6275007	SFRA-111
6275008	SFRA-112
6275009	SFRA-113
6275010	SFRA-114
12010785	Method Blank (MB)
12010786	Laboratory Control Sample (LCS)
12010787	Laboratory Control Sample Duplicate (LCSD)
12010788	6275001(SFRA-105) Matrix Spike (MS)
12010789	6275001(SFRA-105) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6275001 (SFRA-105)- Batch 26279 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery Statement

One MS recovery for this SDG was not within the acceptance limits. The failure confirms in the matrix spike duplicate and can be attributed to matrix interference. 12010788 (SFRA-105) and 12010789 (SFRA-105) - Batch 26279.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Dilutions

Samples 6275002 (SFRA-106), 6275005 (SFRA-109) and 6275008 (SFRA-112) - Batch 26279 were diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Miscellaneous Information

Nonconformance (NCR) Documentation

The following NCR was generated for this SDG: 644608 12010788 (SFRA-105) and 12010789 (SFRA-105)- Batch 26279.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6275 CFA Work Order: 6275

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 30 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275001	Date Collected: 06/18/2014 11:11	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 19.4
Client ID: SFRA-105		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/25/2014 18:50	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-5		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.5 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		179	pg/g	1.64	8.27
40321-76-4	1,2,3,7,8-PeCDD	U	1.02	pg/g	1.02	41.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.85	pg/g	1.85	41.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	2.43	pg/g	1.84	41.4
19408-74-3	1,2,3,7,8,9-HxCDD	J	2.07	pg/g	1.95	41.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		76.3	pg/g	3.44	41.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5550	pg/g	6.35	82.7
51207-31-9	2,3,7,8-TCDF	J	1.72	pg/g	1.39	8.27
57117-41-6	1,2,3,7,8-PeCDF	U	.877	pg/g	0.877	41.4
57117-31-4	2,3,4,7,8-PeCDF	U	.678	pg/g	0.678	41.4
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.07	pg/g	1.07	41.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.06	pg/g	1.06	41.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.16	pg/g	1.16	41.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.6	pg/g	1.60	41.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	5.86	pg/g	1.21	41.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.04	pg/g	2.04	41.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	8.60	pg/g	4.20	82.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1200	1650	pg/g	72.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1290	1650	pg/g	77.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1230	1650	pg/g	74.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1210	1650	pg/g	72.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1320	1650	pg/g	79.7	(23%-140%)
13C-OCDD		2370	3310	pg/g	71.7	(17%-157%)
13C-2,3,7,8-TCDF		1350	1650	pg/g	81.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1280	1650	pg/g	77.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1370	1650	pg/g	82.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1350	1650	pg/g	81.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1250	1650	pg/g	75.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1310	1650	pg/g	79.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1270	1650	pg/g	76.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1270	1650	pg/g	76.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1270	1650	pg/g	77.0	(26%-138%)
37Cl-2,3,7,8-TCDD		156	165	pg/g	94.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275002	Date Collected: 06/20/2014 11:16	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 16.3
Client ID: SFRA-106		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 18:40	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-5		Dilution: 5
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		13900	pg/g	18.6	57.5
40321-76-4	1,2,3,7,8-PeCDD	U	15.9	pg/g	15.9	287
39227-28-6	1,2,3,4,7,8-HxCDD	U	17.1	pg/g	17.1	287
57653-85-7	1,2,3,6,7,8-HxCDD	J	90.0	pg/g	17.4	287
19408-74-3	1,2,3,7,8,9-HxCDD	J	39.2	pg/g	18.2	287
35822-46-9	1,2,3,4,6,7,8-HpCDD		929	pg/g	31.7	287
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13300	pg/g	77.9	575
51207-31-9	2,3,7,8-TCDF		75.5	pg/g	13.0	57.5
57117-41-6	1,2,3,7,8-PeCDF	U	10	pg/g	10.0	287
57117-31-4	2,3,4,7,8-PeCDF	J	16.9	pg/g	6.80	287
70648-26-9	1,2,3,4,7,8-HxCDF	U	23.8	pg/g	23.8	287
57117-44-9	1,2,3,6,7,8-HxCDF	J	19.8	pg/g	8.64	287
60851-34-5	2,3,4,6,7,8-HxCDF	U	27.3	pg/g	27.3	287
72918-21-9	1,2,3,7,8,9-HxCDF	U	15.6	pg/g	15.6	287
67562-39-4	1,2,3,4,6,7,8-HpCDF		317	pg/g	10.9	287
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	25.1	pg/g	19.4	287
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	371	pg/g	47.8	575

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1490	2300	pg/g	64.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1370	2300	pg/g	59.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1450	2300	pg/g	63.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1540	2300	pg/g	66.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1480	2300	pg/g	64.3	(23%-140%)
13C-OCDD		2480	4600	pg/g	53.9	(17%-157%)
13C-2,3,7,8-TCDF		1640	2300	pg/g	71.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1430	2300	pg/g	62.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1500	2300	pg/g	65.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1600	2300	pg/g	69.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1570	2300	pg/g	68.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1560	2300	pg/g	68.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1390	2300	pg/g	60.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1500	2300	pg/g	65.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1370	2300	pg/g	59.7	(26%-138%)
37Cl-2,3,7,8-TCDD		248	230	pg/g	108	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275002	Date Collected: 06/20/2014 11:16	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 16.3
Client ID: SFRA-106		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/27/2014 11:22	Analyst: JTF	Instrument: HRP763
Data File: A27JUN14A-6		Dilution: 5
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		77.9	pg/g	14.8	57.5

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275003	Date Collected: 06/20/2014 11:21	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 19.9
Client ID: SFRA-107		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 10:17	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a_2-9		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1030	pg/g	3.16	12.2
40321-76-4	1,2,3,7,8-PeCDD	U	2.64	pg/g	2.64	61.2
39227-28-6	1,2,3,4,7,8-HxCDD	U	4.33	pg/g	4.33	61.2
57653-85-7	1,2,3,6,7,8-HxCDD	J	15.1	pg/g	4.14	61.2
19408-74-3	1,2,3,7,8,9-HxCDD	J	5.48	pg/g	4.48	61.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		319	pg/g	9.13	61.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6530	pg/g	13.7	122
51207-31-9	2,3,7,8-TCDF	J	6.00	pg/g	2.29	12.2
57117-41-6	1,2,3,7,8-PeCDF	U	1.94	pg/g	1.94	61.2
57117-31-4	2,3,4,7,8-PeCDF	U	2.6	pg/g	2.60	61.2
70648-26-9	1,2,3,4,7,8-HxCDF	J	5.83	pg/g	2.43	61.2
57117-44-9	1,2,3,6,7,8-HxCDF	U	3.84	pg/g	3.84	61.2
60851-34-5	2,3,4,6,7,8-HxCDF	J	3.87	pg/g	2.60	61.2
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.65	pg/g	3.65	61.2
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	58.4	pg/g	4.36	61.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	7.79	pg/g	7.79	61.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF		138	pg/g	7.42	122

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1970	2450	pg/g	80.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1970	2450	pg/g	80.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2110	2450	pg/g	86.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2060	2450	pg/g	84.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2060	2450	pg/g	84.2	(23%-140%)
13C-OCDD		3510	4900	pg/g	71.6	(17%-157%)
13C-2,3,7,8-TCDF		2070	2450	pg/g	84.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1990	2450	pg/g	81.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2200	2450	pg/g	89.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2250	2450	pg/g	92.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2170	2450	pg/g	88.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2180	2450	pg/g	89.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2040	2450	pg/g	83.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2080	2450	pg/g	84.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1930	2450	pg/g	79.0	(26%-138%)
37Cl-2,3,7,8-TCDD		236	245	pg/g	96.6	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275004	Date Collected: 06/20/2014 12:10	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 19.7
Client ID: SFRA-108		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/25/2014 22:49	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-10		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.4 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		956	pg/g	1.89	8.90
40321-76-4	1,2,3,7,8-PeCDD	U	1.61	pg/g	1.61	44.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.26	pg/g	2.26	44.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	7.40	pg/g	2.30	44.5
19408-74-3	1,2,3,7,8,9-HxCDD	J	3.03	pg/g	2.42	44.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		149	pg/g	4.13	44.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6320	pg/g	8.65	89.0
51207-31-9	2,3,7,8-TCDF	J	6.27	pg/g	1.69	8.90
57117-41-6	1,2,3,7,8-PeCDF	U	.7	pg/g	0.700	44.5
57117-31-4	2,3,4,7,8-PeCDF	J	1.30	pg/g	0.666	44.5
70648-26-9	1,2,3,4,7,8-HxCDF	J	1.60	pg/g	1.18	44.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.14	pg/g	1.14	44.5
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.53	pg/g	1.27	44.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.8	pg/g	1.80	44.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	21.4	pg/g	2.39	44.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	4.18	pg/g	4.18	44.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	44.4	pg/g	4.22	89.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1550	1780	pg/g	87.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1530	1780	pg/g	85.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1580	1780	pg/g	88.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1470	1780	pg/g	82.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1540	1780	pg/g	86.4	(23%-140%)
13C-OCDD		2710	3560	pg/g	76.1	(17%-157%)
13C-2,3,7,8-TCDF		1660	1780	pg/g	93.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1580	1780	pg/g	88.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1670	1780	pg/g	93.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1650	1780	pg/g	92.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1600	1780	pg/g	89.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1610	1780	pg/g	90.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1520	1780	pg/g	85.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1540	1780	pg/g	86.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1440	1780	pg/g	81.1	(26%-138%)
37Cl-2,3,7,8-TCDD		180	178	pg/g	101	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275005	Date Collected: 06/20/2014 13:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 31.8
Client ID: SFRA-109		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 19:28	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-6		Dilution: 5
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.17 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		14200	pg/g	16.3	62.7
40321-76-4	1,2,3,7,8-PeCDD	U	8.05	pg/g	8.05	313
39227-28-6	1,2,3,4,7,8-HxCDD	U	14.2	pg/g	14.2	313
57653-85-7	1,2,3,6,7,8-HxCDD	U	30.1	pg/g	30.1	313
19408-74-3	1,2,3,7,8,9-HxCDD	U	20.5	pg/g	20.5	313
35822-46-9	1,2,3,4,6,7,8-HpCDD		612	pg/g	24.6	313
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13400	pg/g	62.4	627
51207-31-9	2,3,7,8-TCDF		74.0	pg/g	10.2	62.7
57117-41-6	1,2,3,7,8-PeCDF	U	4.79	pg/g	4.79	313
57117-31-4	2,3,4,7,8-PeCDF	J	10.7	pg/g	4.61	313
70648-26-9	1,2,3,4,7,8-HxCDF	J	19.4	pg/g	7.55	313
57117-44-9	1,2,3,6,7,8-HxCDF	U	10.8	pg/g	10.8	313
60851-34-5	2,3,4,6,7,8-HxCDF	J	18.3	pg/g	8.70	313
72918-21-9	1,2,3,7,8,9-HxCDF	U	13.7	pg/g	13.7	313
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	188	pg/g	11.1	313
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	21.2	pg/g	21.2	313
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	307	pg/g	58.4	627

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1990	2510	pg/g	79.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1850	2510	pg/g	74.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2040	2510	pg/g	81.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1990	2510	pg/g	79.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1910	2510	pg/g	76.3	(23%-140%)
13C-OCDD		3010	5010	pg/g	60.1	(17%-157%)
13C-2,3,7,8-TCDF		2070	2510	pg/g	82.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	2510	pg/g	76.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1980	2510	pg/g	78.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2100	2510	pg/g	83.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2150	2510	pg/g	85.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2070	2510	pg/g	82.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1840	2510	pg/g	73.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1950	2510	pg/g	77.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1760	2510	pg/g	70.1	(26%-138%)
37Cl-2,3,7,8-TCDD		290	251	pg/g	116	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275005	Date Collected: 06/20/2014 13:05	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 31.8
Client ID: SFRA-109		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/27/2014 11:41	Analyst: JTF	Instrument: HRP763
Data File: A27JUN14A-7		Dilution: 5
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.17 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		82.6	pg/g	14.2	62.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275006	Date Collected: 06/20/2014 15:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 23.3
Client ID: SFRA-110		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 11:07	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a_2-10		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.51 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2720	pg/g	2.88	8.63
40321-76-4	1,2,3,7,8-PeCDD	J	5.57	pg/g	3.56	43.1
39227-28-6	1,2,3,4,7,8-HxCDD	J	7.68	pg/g	3.85	43.1
57653-85-7	1,2,3,6,7,8-HxCDD		129	pg/g	3.97	43.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	27.6	pg/g	4.16	43.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		1790	pg/g	11.3	43.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		18600	pg/g	26.1	86.3
51207-31-9	2,3,7,8-TCDF		19.0	pg/g	2.73	8.63
57117-41-6	1,2,3,7,8-PeCDF	J	6.80	pg/g	1.67	43.1
57117-31-4	2,3,4,7,8-PeCDF	J	21.2	pg/g	1.50	43.1
70648-26-9	1,2,3,4,7,8-HxCDF		145	pg/g	2.57	43.1
57117-44-9	1,2,3,6,7,8-HxCDF	J	39.3	pg/g	2.57	43.1
60851-34-5	2,3,4,6,7,8-HxCDF		52.3	pg/g	2.76	43.1
72918-21-9	1,2,3,7,8,9-HxCDF		52.8	pg/g	4.14	43.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		655	pg/g	4.09	43.1
55673-89-7	1,2,3,4,7,8,9-HpCDF		144	pg/g	7.51	43.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1190	pg/g	11.4	86.3

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1380	1730	pg/g	80.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1400	1730	pg/g	81.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1570	1730	pg/g	90.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1440	1730	pg/g	83.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1530	1730	pg/g	88.4	(23%-140%)
13C-OCDD		2510	3450	pg/g	72.7	(17%-157%)
13C-2,3,7,8-TCDF		1470	1730	pg/g	85.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1450	1730	pg/g	83.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1540	1730	pg/g	89.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1640	1730	pg/g	94.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1600	1730	pg/g	92.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1620	1730	pg/g	94.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1480	1730	pg/g	85.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1530	1730	pg/g	88.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1410	1730	pg/g	81.7	(26%-138%)
37Cl-2,3,7,8-TCDD		172	173	pg/g	99.6	(35%-197%)

Comments:

J Value is estimated

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275006	Date Collected: 06/20/2014 15:25	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 23.3
Client ID: SFRA-110		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/27/2014 10:19	Analyst: JTF	Instrument: HRP763
Data File: A27JUN14A-4		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.51 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		18.0	pg/g	2.21	8.63

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:
J Value is estimated

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275007	Date Collected: 06/23/2014 13:35	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 19.2
Client ID: SFRA-111		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 01:12	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-13		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1520	pg/g	3.29	11.3
40321-76-4	1,2,3,7,8-PeCDD	J	3.96	pg/g	2.68	56.3
39227-28-6	1,2,3,4,7,8-HxCDD	J	6.08	pg/g	3.89	56.3
57653-85-7	1,2,3,6,7,8-HxCDD	J	46.4	pg/g	3.89	56.3
19408-74-3	1,2,3,7,8,9-HxCDD	J	17.3	pg/g	4.12	56.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		1120	pg/g	9.18	56.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		16600	pg/g	12.2	113
51207-31-9	2,3,7,8-TCDF	J	10.9	pg/g	3.24	11.3
57117-41-6	1,2,3,7,8-PeCDF	J	3.67	pg/g	2.16	56.3
57117-31-4	2,3,4,7,8-PeCDF	J	5.92	pg/g	1.98	56.3
70648-26-9	1,2,3,4,7,8-HxCDF	J	19.5	pg/g	2.59	56.3
57117-44-9	1,2,3,6,7,8-HxCDF	J	7.47	pg/g	2.39	56.3
60851-34-5	2,3,4,6,7,8-HxCDF	J	11.9	pg/g	2.77	56.3
72918-21-9	1,2,3,7,8,9-HxCDF	J	6.19	pg/g	4.05	56.3
67562-39-4	1,2,3,4,6,7,8-HpCDF		187	pg/g	2.45	56.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	19.5	pg/g	19.5	56.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF		511	pg/g	5.47	113

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1800	2250	pg/g	80.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1920	2250	pg/g	85.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1920	2250	pg/g	85.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1880	2250	pg/g	83.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1910	2250	pg/g	84.8	(23%-140%)
13C-OCDD		3310	4500	pg/g	73.6	(17%-157%)
13C-2,3,7,8-TCDF		1950	2250	pg/g	86.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1950	2250	pg/g	86.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2070	2250	pg/g	92.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2050	2250	pg/g	90.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1980	2250	pg/g	88.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2000	2250	pg/g	89.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1840	2250	pg/g	81.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1930	2250	pg/g	85.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1740	2250	pg/g	77.4	(26%-138%)
37Cl-2,3,7,8-TCDD		224	225	pg/g	99.5	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275008	Date Collected: 06/23/2014 13:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 23.5
Client ID: SFRA-112		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 13:30	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a_2-13		Dilution: 5
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.54 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		7690	pg/g	9.07	42.5
40321-76-4	1,2,3,7,8-PeCDD	U	8.76	pg/g	8.76	212
39227-28-6	1,2,3,4,7,8-HxCDD	U	10.1	pg/g	10.1	212
57653-85-7	1,2,3,6,7,8-HxCDD	U	81.4	pg/g	81.4	212
19408-74-3	1,2,3,7,8,9-HxCDD	J	25.1	pg/g	11.0	212
35822-46-9	1,2,3,4,6,7,8-HpCDD		993	pg/g	26.8	212
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13900	pg/g	48.6	425
51207-31-9	2,3,7,8-TCDF		45.9	pg/g	13.1	42.5
57117-41-6	1,2,3,7,8-PeCDF	U	4.52	pg/g	4.52	212
57117-31-4	2,3,4,7,8-PeCDF	J	4.88	pg/g	4.40	212
70648-26-9	1,2,3,4,7,8-HxCDF	J	21.5	pg/g	8.93	212
57117-44-9	1,2,3,6,7,8-HxCDF	U	11.4	pg/g	11.4	212
60851-34-5	2,3,4,6,7,8-HxCDF	U	19.2	pg/g	19.2	212
72918-21-9	1,2,3,7,8,9-HxCDF	U	14.4	pg/g	14.4	212
67562-39-4	1,2,3,4,6,7,8-HpCDF		292	pg/g	14.4	212
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	23.6	pg/g	23.6	212
39001-02-0	1,2,3,4,6,7,8,9-OCDF		451	pg/g	42.1	425

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1410	1700	pg/g	83.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1360	1700	pg/g	80.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1470	1700	pg/g	86.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1410	1700	pg/g	82.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1420	1700	pg/g	83.5	(23%-140%)
13C-OCDD		2360	3400	pg/g	69.6	(17%-157%)
13C-2,3,7,8-TCDF		1450	1700	pg/g	85.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1400	1700	pg/g	82.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1470	1700	pg/g	86.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1550	1700	pg/g	91.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1530	1700	pg/g	90.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1500	1700	pg/g	88.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1310	1700	pg/g	77.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1410	1700	pg/g	83.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1330	1700	pg/g	78.3	(26%-138%)
37Cl-2,3,7,8-TCDD		191	170	pg/g	112	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275008	Date Collected: 06/23/2014 13:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 23.5
Client ID: SFRA-112		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/27/2014 11:03	Analyst: JTF	Instrument: HRP763
Data File: A27JUN14A-5		Dilution: 5
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.54 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		47.0	pg/g	8.76	42.5

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275009	Date Collected: 06/23/2014 17:34	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 18.5
Client ID: SFRA-113		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 14:18	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a_2-14		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.89 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		179	pg/g	1.31	6.49
40321-76-4	1,2,3,7,8-PeCDD	U	.948	pg/g	0.948	32.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.96	pg/g	1.96	32.5
57653-85-7	1,2,3,6,7,8-HxCDD	U	2.09	pg/g	2.09	32.5
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.16	pg/g	2.16	32.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		53.7	pg/g	3.34	32.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		3010	pg/g	8.39	64.9
51207-31-9	2,3,7,8-TCDF	J	1.73	pg/g	0.957	6.49
57117-41-6	1,2,3,7,8-PeCDF	U	.495	pg/g	0.495	32.5
57117-31-4	2,3,4,7,8-PeCDF	U	.452	pg/g	0.452	32.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.12	pg/g	1.12	32.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.11	pg/g	1.11	32.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.17	pg/g	1.17	32.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.8	pg/g	1.80	32.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	6.09	pg/g	1.35	32.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.45	pg/g	2.45	32.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	15.2	pg/g	3.90	64.9

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1060	1300	pg/g	81.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1060	1300	pg/g	81.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1190	1300	pg/g	91.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1060	1300	pg/g	81.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1100	1300	pg/g	84.9	(23%-140%)
13C-OCDD		1840	2600	pg/g	70.7	(17%-157%)
13C-2,3,7,8-TCDF		1130	1300	pg/g	86.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1090	1300	pg/g	84.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1160	1300	pg/g	89.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1220	1300	pg/g	94.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1180	1300	pg/g	90.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1180	1300	pg/g	90.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1040	1300	pg/g	80.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1120	1300	pg/g	86.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1020	1300	pg/g	78.6	(26%-138%)
37Cl-2,3,7,8-TCDD		122	130	pg/g	94.1	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 6275010	Date Collected: 06/23/2014 17:40	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/24/2014 14:50	%Moisture: 14.6
Client ID: SFRA-114		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/26/2014 05:18	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a_2-3		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.22 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		352	pg/g	2.09	9.59
40321-76-4	1,2,3,7,8-PeCDD	U	1.35	pg/g	1.35	48.0
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.21	pg/g	2.21	48.0
57653-85-7	1,2,3,6,7,8-HxCDD	J	5.66	pg/g	2.25	48.0
19408-74-3	1,2,3,7,8,9-HxCDD	U	2.69	pg/g	2.69	48.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		116	pg/g	4.57	48.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		4130	pg/g	7.58	95.9
51207-31-9	2,3,7,8-TCDF	J	2.59	pg/g	1.79	9.59
57117-41-6	1,2,3,7,8-PeCDF	U	1.17	pg/g	1.17	48.0
57117-31-4	2,3,4,7,8-PeCDF	U	1.06	pg/g	1.06	48.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.55	pg/g	2.55	48.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.41	pg/g	1.41	48.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.48	pg/g	1.48	48.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.36	pg/g	2.36	48.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	18.7	pg/g	2.26	48.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3.93	pg/g	3.93	48.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	28.6	pg/g	6.39	95.9

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1590	1920	pg/g	82.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1570	1920	pg/g	81.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1740	1920	pg/g	90.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1630	1920	pg/g	84.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1600	1920	pg/g	83.4	(23%-140%)
13C-OCDD		2710	3840	pg/g	70.6	(17%-157%)
13C-2,3,7,8-TCDF		1710	1920	pg/g	88.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1620	1920	pg/g	84.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1720	1920	pg/g	89.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1800	1920	pg/g	93.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1740	1920	pg/g	90.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1760	1920	pg/g	92.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1540	1920	pg/g	80.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1630	1920	pg/g	85.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1490	1920	pg/g	77.4	(26%-138%)
37Cl-2,3,7,8-TCDD		181	192	pg/g	94.4	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6275

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010786	LCS for batch 26277	13C-2,3,7,8-TCDD		85.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		84.8	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		92.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		90.7	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		96.4	(22%-166%)
		13C-OCDD		81.4	(13%-199%)
		13C-2,3,7,8-TCDF		92.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		85.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		89.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		103	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		96.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		98.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		89.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		94.5	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		90.0	(20%-186%)
		37Cl-2,3,7,8-TCDD		97.6	(31%-191%)
12010787	LCSD for batch 26277	13C-2,3,7,8-TCDD		68.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		71.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		69.0	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		67.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		73.1	(22%-166%)
		13C-OCDD		66.3	(13%-199%)
		13C-2,3,7,8-TCDF		74.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		73.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		77.8	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.2	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		71.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		71.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		69.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		71.3	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		70.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		99.8	(31%-191%)
12010785	MB for batch 26277	13C-2,3,7,8-TCDD		86.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		90.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		90.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.7	(23%-140%)
		13C-OCDD		81.6	(17%-157%)
		13C-2,3,7,8-TCDF		94.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		96.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		99.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		91.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		94.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		88.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		92.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.3	(26%-138%)
		37Cl-2,3,7,8-TCDD		96.4	(35%-197%)
6275001	SFRA-105	13C-2,3,7,8-TCDD		72.8	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6275

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6275001	SFRA-105	13C-1,2,3,7,8-PeCDD		77.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		74.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		72.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.7	(23%-140%)
		13C-OCDD		71.7	(17%-157%)
		13C-2,3,7,8-TCDF		81.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		77.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		76.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		77.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		94.3	(35%-197%)
12010788	SFRA-105(6275001MS)	13C-2,3,7,8-TCDD		81.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		85.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.5	(23%-140%)
		13C-OCDD		85.4	(17%-157%)
		13C-2,3,7,8-TCDF		88.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		89.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		86.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		84.0	(26%-138%)
37Cl-2,3,7,8-TCDD		102	(35%-197%)		
12010789	SFRA-105(6275001MSD)	13C-2,3,7,8-TCDD		82.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		88.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.8	(23%-140%)
		13C-OCDD		75.8	(17%-157%)
		13C-2,3,7,8-TCDF		89.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		90.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		86.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		82.5	(26%-138%)
37Cl-2,3,7,8-TCDD		99.4	(35%-197%)		
6275004	SFRA-108	13C-2,3,7,8-TCDD		87.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		85.8	(25%-181%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6275

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6275004	SFRA-108	13C-1,2,3,4,7,8-HxCDD		88.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.4	(23%-140%)
		13C-OCDD		76.1	(17%-157%)
		13C-2,3,7,8-TCDF		93.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		88.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		92.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		89.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		86.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		101	(35%-197%)
6275007	SFRA-111	13C-2,3,7,8-TCDD		80.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		85.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.8	(23%-140%)
		13C-OCDD		73.6	(17%-157%)
		13C-2,3,7,8-TCDF		86.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		90.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		89.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		81.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		77.4	(26%-138%)		
37Cl-2,3,7,8-TCDD		99.5	(35%-197%)		
6275010	SFRA-114	13C-2,3,7,8-TCDD		82.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		81.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		90.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		84.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.4	(23%-140%)
		13C-OCDD		70.6	(17%-157%)
		13C-2,3,7,8-TCDF		88.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		93.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		92.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		77.4	(26%-138%)		
37Cl-2,3,7,8-TCDD		94.4	(35%-197%)		
6275003	SFRA-107	13C-2,3,7,8-TCDD		80.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		80.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.1	(32%-141%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6275

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6275003	SFRA-107	13C-1,2,3,6,7,8-HxCDD		84.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.2	(23%-140%)
		13C-OCDD		71.6	(17%-157%)
		13C-2,3,7,8-TCDF		84.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		81.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		92.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		89.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		96.6	(35%-197%)
		6275006	SFRA-110	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				81.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				90.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				83.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				88.4	(23%-140%)
13C-OCDD				72.7	(17%-157%)
13C-2,3,7,8-TCDF				85.3	(24%-169%)
13C-1,2,3,7,8-PeCDF				83.8	(24%-185%)
13C-2,3,4,7,8-PeCDF				89.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				94.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				92.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				94.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				85.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				88.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		81.7	(26%-138%)		
37Cl-2,3,7,8-TCDD		99.6	(35%-197%)		
6275008	SFRA-112	13C-2,3,7,8-TCDD		83.0	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		80.1	D (25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.5	D (32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.8	D (28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.5	D (23%-140%)
		13C-OCDD		69.6	D (17%-157%)
		13C-2,3,7,8-TCDF		85.2	D (24%-169%)
		13C-1,2,3,7,8-PeCDF		82.3	D (24%-185%)
		13C-2,3,4,7,8-PeCDF		86.6	D (21%-178%)
		13C-1,2,3,4,7,8-HxCDF		91.2	D (26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.1	D (26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.1	D (28%-136%)
		13C-1,2,3,7,8,9-HxCDF		77.3	D (29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.0	D (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		78.3	D (26%-138%)		
37Cl-2,3,7,8-TCDD		112	D (35%-197%)		
6275009	SFRA-113	13C-2,3,7,8-TCDD		81.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		81.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		91.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.4	(28%-130%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6275

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6275009	SFRA-113	13C-1,2,3,4,6,7,8-HpCDD		84.9	(23%-140%)
		13C-OCDD		70.7	(17%-157%)
		13C-2,3,7,8-TCDF		86.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		94.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		86.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		94.1	(35%-197%)
		6275002	SFRA-106	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				59.7 D	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				63.2 D	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				66.9 D	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				64.3 D	(23%-140%)
13C-OCDD				53.9 D	(17%-157%)
13C-2,3,7,8-TCDF				71.2 D	(24%-169%)
13C-1,2,3,7,8-PeCDF				62.3 D	(24%-185%)
13C-2,3,4,7,8-PeCDF				65.2 D	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				69.7 D	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				68.5 D	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				68.0 D	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				60.3 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				65.4 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				59.7 D	(26%-138%)
37Cl-2,3,7,8-TCDD		108 D	(35%-197%)		
6275005	SFRA-109	13C-2,3,7,8-TCDD		79.3 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		74.0 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.5 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.4 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.3 D	(23%-140%)
		13C-OCDD		60.1 D	(17%-157%)
		13C-2,3,7,8-TCDF		82.5 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		76.0 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		78.9 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		83.7 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		85.8 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.6 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		73.4 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.6 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		70.1 D	(26%-138%)
37Cl-2,3,7,8-TCDD		116 D	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6275

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26277

Matrix: SOLID

Lab Sample ID: 12010786

Instrument: HRP763

Analysis Date: 06/25/2014 16:28

Dilution: 1

Analyst: JTF

Prep Batch ID: 26277

Batch ID: 26279

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.4	107	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	105	105	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	109	109	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	112	112	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	110	110	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	106	106	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	212	106	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	21.5	107	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	109	109	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	107	107	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	108	108	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	107	107	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	107	107	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	116	116	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	105	105	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	107	107	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	222	111	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6275	Sample Type: Laboratory Control Sample Duplicate
Client ID: LCSD for batch 26277	Matrix: SOLID
Lab Sample ID: 12010787	
Instrument: HRP763	Analysis Date: 06/25/2014 17:15
Analyst: JTF	Dilution: 1
	Prep Batch ID: 26277
	Batch ID: 26279

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.9	110	67-158	2.51	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	106	106	70-142	0.409	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	106	106	70-164	2.59	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	105	105	76-134	5.79	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	108	108	64-162	1.65	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	106	106	70-140	0.0809	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	206	103	78-144	2.69	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	21.6	108	75-158	0.585	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	107	107	80-134	2.04	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	104	104	68-160	2.99	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	107	107	72-134	0.777	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	103	103	84-130	3.64	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	105	105	70-156	1.25	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	113	113	78-130	2.99	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	104	104	82-122	0.915	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	105	105	78-138	1.38	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	226	113	63-170	1.98	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6275
Client ID: SFRA-105(6275001MS)
Lab Sample ID: 12010788
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 19.4
Analysis Date: 06/25/2014 19:38
Prep Batch ID: 26277
Batch ID: 26279
Dilution: 1

CAS No.	Parmname	Amount Added		Spike Conc.		Recovery	Acceptance
		pg/g		pg/g		%	Limits
1746-01-6	MS	2,3,7,8-TCDD	174		232	30.1 *	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	868	U	884	102	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	868	U	912	105	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	868	J	925	106	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	868	J	934	107	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	868		967	103	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	1740		6960	81.3	70-130
51207-31-9	MS	2,3,7,8-TCDF	174	J	189	108	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	868	U	908	105	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	868	U	895	103	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	868	U	909	105	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	868	U	891	103	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	868	U	908	105	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	868	U	956	110	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	868	J	886	101	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	868	U	892	103	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	1740	J	1850	106	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6275

Sample Type: Matrix Spike Duplicate

Client ID: SFRA-105(6275001MSD)

Matrix: SOLID

Lab Sample ID: 12010789

%Moisture: 19.4

Instrument: HRP763

Analysis Date: 06/25/2014 20:26

Dilution: 1

Analyst: JTF

Prep Batch ID: 26277

Batch ID: 26279

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	164		270	55.3 *	70-130	15.4	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	822	U	878	107	70-130	0.624	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	822	U	887	108	70-130	2.69	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	822	J	894	109	70-130	3.37	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	822	J	890	108	70-130	4.82	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	822		961	108	70-130	0.639	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	1640		7160	97.6	70-130	2.74	0-20
51207-31-9	MSD 2,3,7,8-TCDF	164	J	185	112	70-130	1.88	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	822	U	928	113	70-130	2.20	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	822	U	891	108	70-130	0.444	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	822	U	890	108	70-130	2.11	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	822	U	894	109	70-130	0.357	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	822	U	905	110	70-130	0.379	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	822	U	948	115	70-130	0.817	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	822	J	860	104	70-130	2.90	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	822	U	888	108	70-130	0.446	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	1640	J	1860	113	70-130	0.838	0-20

Method Blank Summary

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SDG Number: 6275
Client ID: MB for batch 26277
Lab Sample ID: 12010785
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 24-JUN-14

Matrix: SOLID
Data File: b25jun14a-4
Analyzed: 06/25/14 18:03

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26277	12010786	b25jun14a-2	06/25/14	1628
02 LCSD for batch 26277	12010787	b25jun14a-3	06/25/14	1715
03 SFRA-105	6275001	b25jun14a-5	06/25/14	1850
04 SFRA-105(6275001MS)	12010788	b25jun14a-6	06/25/14	1938
05 SFRA-105(6275001MSD)	12010789	b25jun14a-7	06/25/14	2026
06 SFRA-108	6275004	b25jun14a-10	06/25/14	2249
07 SFRA-111	6275007	b25jun14a-13	06/26/14	0112
08 SFRA-114	6275010	b25jun14a_2-3	06/26/14	0518
09 SFRA-107	6275003	b25jun14a_2-9	06/26/14	1017
10 SFRA-110	6275006	b25jun14a_2-10	06/26/14	1107
11 SFRA-112	6275008	b25jun14a_2-13	06/26/14	1330
12 SFRA-113	6275009	b25jun14a_2-14	06/26/14	1418
13 SFRA-106	6275002	b26jun14a-5	06/26/14	1840
14 SFRA-109	6275005	b26jun14a-6	06/26/14	1928
15 SFRA-110	6275006	A27JUN14A-4	06/27/14	1019
16 SFRA-112	6275008	A27JUN14A-5	06/27/14	1103
17 SFRA-106	6275002	A27JUN14A-6	06/27/14	1122
18 SFRA-109	6275005	A27JUN14A-7	06/27/14	1141

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010785		Matrix: SOLID
Client Sample: QC for batch 26277		
Client ID: MB for batch 26277		Prep Basis: As Received
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/25/2014 18:03	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-4		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.192	pg/g	0.192	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.156	pg/g	0.156	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.192	pg/g	0.192	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.189	pg/g	0.189	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.202	pg/g	0.202	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.358	pg/g	0.300	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	1.19	pg/g	0.374	10.0
51207-31-9	2,3,7,8-TCDF	U	.128	pg/g	0.128	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.134	pg/g	0.0744	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.0726	pg/g	0.0726	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.152	pg/g	0.120	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.140	pg/g	0.116	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.152	pg/g	0.132	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.19	pg/g	0.190	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.248	pg/g	0.125	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.206	pg/g	0.206	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.536	pg/g	0.536	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		174	200	pg/g	86.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		181	200	pg/g	90.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		182	200	pg/g	90.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		179	200	pg/g	89.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		183	200	pg/g	91.7	(23%-140%)
13C-OCDD		326	400	pg/g	81.6	(17%-157%)
13C-2,3,7,8-TCDF		188	200	pg/g	94.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		185	200	pg/g	92.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		193	200	pg/g	96.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		198	200	pg/g	99.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		183	200	pg/g	91.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		189	200	pg/g	94.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		177	200	pg/g	88.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		186	200	pg/g	92.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		179	200	pg/g	89.3	(26%-138%)
37Cl-2,3,7,8-TCDD		19.3	20.0	pg/g	96.4	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010786		Matrix: SOLID
Client Sample: QC for batch 26277		
Client ID: LCS for batch 26277		Prep Basis: As Received
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/25/2014 16:28	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-2		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.4	pg/g	0.173	1.00
40321-76-4	1,2,3,7,8-PeCDD		105	pg/g	0.165	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		109	pg/g	0.286	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		112	pg/g	0.268	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		110	pg/g	0.294	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		106	pg/g	0.380	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		212	pg/g	0.566	10.0
51207-31-9	2,3,7,8-TCDF		21.5	pg/g	0.122	1.00
57117-41-6	1,2,3,7,8-PeCDF		109	pg/g	0.171	5.00
57117-31-4	2,3,4,7,8-PeCDF		107	pg/g	0.168	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		108	pg/g	0.272	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		107	pg/g	0.260	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		107	pg/g	0.296	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		116	pg/g	0.450	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		105	pg/g	0.262	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		107	pg/g	0.452	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		222	pg/g	0.814	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		172	200	pg/g	85.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		170	200	pg/g	84.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		185	200	pg/g	92.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		181	200	pg/g	90.7	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		193	200	pg/g	96.4	(22%-166%)
13C-OCDD		326	400	pg/g	81.4	(13%-199%)
13C-2,3,7,8-TCDF		186	200	pg/g	92.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		171	200	pg/g	85.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		178	200	pg/g	89.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		206	200	pg/g	103	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		192	200	pg/g	96.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		196	200	pg/g	98.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		178	200	pg/g	89.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		189	200	pg/g	94.5	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		180	200	pg/g	90.0	(20%-186%)
37Cl-2,3,7,8-TCDD		19.5	20.0	pg/g	97.6	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010787		Matrix: SOLID
Client Sample: QC for batch 26277		
Client ID: LCSDD for batch 26277		Prep Basis: As Received
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/25/2014 17:15	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-3		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.9	pg/g	0.282	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.194	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		106	pg/g	0.312	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		105	pg/g	0.312	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		108	pg/g	0.332	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		106	pg/g	0.546	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		206	pg/g	0.622	10.0
51207-31-9	2,3,7,8-TCDF		21.6	pg/g	0.174	1.00
57117-41-6	1,2,3,7,8-PeCDF		107	pg/g	0.167	5.00
57117-31-4	2,3,4,7,8-PeCDF		104	pg/g	0.157	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		107	pg/g	0.434	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		103	pg/g	0.394	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		105	pg/g	0.448	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		113	pg/g	0.610	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		104	pg/g	0.254	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		105	pg/g	0.424	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		226	pg/g	0.802	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		137	200	pg/g	68.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		143	200	pg/g	71.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		138	200	pg/g	69.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		134	200	pg/g	67.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		146	200	pg/g	73.1	(22%-166%)
13C-OCDD		265	400	pg/g	66.3	(13%-199%)
13C-2,3,7,8-TCDF		149	200	pg/g	74.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		147	200	pg/g	73.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		156	200	pg/g	77.8	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		144	200	pg/g	72.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		142	200	pg/g	71.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		143	200	pg/g	71.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		140	200	pg/g	69.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		143	200	pg/g	71.3	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		142	200	pg/g	70.9	(20%-186%)
37Cl-2,3,7,8-TCDD		20.0	20.0	pg/g	99.8	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010788	Date Collected: 06/18/2014 11:11	Matrix: SOLID
Client Sample: QC for batch 26277	Date Received: 06/24/2014 14:50	%Moisture: 19.4
Client ID: SFRA-105(6275001MS)		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/25/2014 19:38	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-6		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.43 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		232	pg/g	2.03	8.68
40321-76-4	1,2,3,7,8-PeCDD		884	pg/g	1.66	43.4
39227-28-6	1,2,3,4,7,8-HxCDD		912	pg/g	2.88	43.4
57653-85-7	1,2,3,6,7,8-HxCDD		925	pg/g	2.86	43.4
19408-74-3	1,2,3,7,8,9-HxCDD		934	pg/g	3.05	43.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		967	pg/g	4.65	43.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6960	pg/g	8.12	86.8
51207-31-9	2,3,7,8-TCDF		189	pg/g	1.51	8.68
57117-41-6	1,2,3,7,8-PeCDF		908	pg/g	1.50	43.4
57117-31-4	2,3,4,7,8-PeCDF		895	pg/g	1.42	43.4
70648-26-9	1,2,3,4,7,8-HxCDF		909	pg/g	2.40	43.4
57117-44-9	1,2,3,6,7,8-HxCDF		891	pg/g	2.43	43.4
60851-34-5	2,3,4,6,7,8-HxCDF		908	pg/g	2.66	43.4
72918-21-9	1,2,3,7,8,9-HxCDF		956	pg/g	3.77	43.4
67562-39-4	1,2,3,4,6,7,8-HpCDF		886	pg/g	2.52	43.4
55673-89-7	1,2,3,4,7,8,9-HpCDF		892	pg/g	4.22	43.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1850	pg/g	7.17	86.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1420	1740	pg/g	81.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1490	1740	pg/g	85.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1480	1740	pg/g	85.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1400	1740	pg/g	80.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1480	1740	pg/g	85.5	(23%-140%)
13C-OCDD		2970	3470	pg/g	85.4	(17%-157%)
13C-2,3,7,8-TCDF		1530	1740	pg/g	88.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1500	1740	pg/g	86.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1610	1740	pg/g	92.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1550	1740	pg/g	89.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1520	1740	pg/g	87.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1530	1740	pg/g	88.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1480	1740	pg/g	85.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1490	1740	pg/g	86.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1460	1740	pg/g	84.0	(26%-138%)
37Cl-2,3,7,8-TCDD		177	174	pg/g	102	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6275	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010789	Date Collected: 06/18/2014 11:11	Matrix: SOLID
Client Sample: QC for batch 26277	Date Received: 06/24/2014 14:50	%Moisture: 19.4
Client ID: SFRA-105(6275001MSD)		Prep Basis: Dry Weight
Batch ID: 26279	Method: EPA Method 1613B	
Run Date: 06/25/2014 20:26	Analyst: JTF	Instrument: HRP763
Data File: b25jun14a-7		Dilution: 1
Prep Batch: 26277	Prep Method: SW846 3540C	
Prep Date: 24-JUN-14	Prep Aliquot: 1.51 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		270	pg/g	1.84	8.22
40321-76-4	1,2,3,7,8-PeCDD		878	pg/g	1.35	41.1
39227-28-6	1,2,3,4,7,8-HxCDD		887	pg/g	2.56	41.1
57653-85-7	1,2,3,6,7,8-HxCDD		894	pg/g	2.65	41.1
19408-74-3	1,2,3,7,8,9-HxCDD		890	pg/g	2.76	41.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		961	pg/g	4.19	41.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		7160	pg/g	7.12	82.2
51207-31-9	2,3,7,8-TCDF		185	pg/g	1.40	8.22
57117-41-6	1,2,3,7,8-PeCDF		928	pg/g	1.57	41.1
57117-31-4	2,3,4,7,8-PeCDF		891	pg/g	1.38	41.1
70648-26-9	1,2,3,4,7,8-HxCDF		890	pg/g	2.83	41.1
57117-44-9	1,2,3,6,7,8-HxCDF		894	pg/g	2.73	41.1
60851-34-5	2,3,4,6,7,8-HxCDF		905	pg/g	2.83	41.1
72918-21-9	1,2,3,7,8,9-HxCDF		948	pg/g	4.27	41.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		860	pg/g	2.53	41.1
55673-89-7	1,2,3,4,7,8,9-HpCDF		888	pg/g	4.27	41.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1860	pg/g	5.03	82.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1360	1640	pg/g	82.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1430	1640	pg/g	86.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1460	1640	pg/g	88.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1280	1640	pg/g	77.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1390	1640	pg/g	84.8	(23%-140%)
13C-OCDD		2490	3290	pg/g	75.8	(17%-157%)
13C-2,3,7,8-TCDF		1460	1640	pg/g	89.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1410	1640	pg/g	85.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1550	1640	pg/g	94.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1480	1640	pg/g	90.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1420	1640	pg/g	86.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1430	1640	pg/g	87.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1380	1640	pg/g	83.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1400	1640	pg/g	85.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1360	1640	pg/g	82.5	(26%-138%)
37Cl-2,3,7,8-TCDD		163	164	pg/g	99.4	(35%-197%)

Comments:

June 30, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6277

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 25, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 21 of _____

Project #: _____

CFA Quote #: _____

COC Number (1): _____

PO Number: _____

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
3306 Kitty Hawk Rd. Suite 120
Wilmington, NC 28405
Phone: (910) 795-0421

CFA Work Order Number: 10277

Client Name: Tetra Tech Inc. Phone # 910-985-9649 Sample Analysis Requested (5) (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action Fax #: _____

Address: 20 Jamestowne Fd. Dr. Florissant Mo 63029

Collected by: R Clayton Send Results To: clayton@tetratech.com
relayfor@seagullaviation.com

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers	Sample Analysis Requested (5)										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC
<u>SFRA-115</u>	<u>6-24-14</u>	<u>1200</u>			<u>S</u>	<u>1</u>	<u>X</u>											
<u>SFRA-116</u>	<u>6-24-14</u>	<u>1207</u>			<u>S</u>	<u>1</u>	<u>X</u>											
<u>SFRA-117</u>	<u>6-24-14</u>	<u>1212</u>			<u>S</u>	<u>1</u>	<u>X</u>											
<u>SFRA-118</u>	<u>6-24-14</u>	<u>1217</u>			<u>S</u>	<u>1</u>	<u>X</u>											
<u>SFRA-119</u>	<u>6-23-14</u>	<u>1700</u>			<u>S</u>	<u>1</u>	<u>Y</u>											
<u>SFRA-120</u>	<u>6-24-14</u>	<u>1645</u>			<u>S</u>	<u>1</u>	<u>X</u>											
<u>SFRA-121</u>	<u>6-24-14</u>	<u>1650</u>			<u>S</u>	<u>1</u>	<u>X</u>											

TAT Requested: Normal: X Rush: _____ Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time Zone: Eastern Pacific Central Other Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>R Clayton</u>	<u>6-24-14</u>	<u>1709</u>	<u>Cynde Larkins</u>	<u>25 JUN 14</u>	<u>1000</u>

CFA PM: Cynde Larkins
Method of Shipment: Fed Ex Date Shipped: 6-24-14
Airbill #: 8042 3157 0778
Airbill #: 8042 3157 0778

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or - N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only

Custody Seal Intact?
YES (NO)

Cooler Temp:
5.4 C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6277
Shipping Company: Fed Ex	Date/Time Received: 25 JUN 14 1000

Suspected Hazard Information	Yes	NA	No	DOE Site Sample Packages	Yes	NA	No*
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>	Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>	Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken damaged container leaking container other (describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags plus ice dry ice none other (describe) 5.4°C
4	Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed:
6	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		If preservative added, Lot#: Sample IDs, containers affected:
7	Samples received within holding time?	<input checked="" type="checkbox"/>			If preservative added, Lot#: Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: **CL** Date: **25 JUN 14**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6277**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26287
Clean Up Batch Number: 26286
Extraction Batch Number: 26285

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6277001	SFRA-115
6277002	SFRA-116
6277003	SFRA-117
6277004	SFRA-118
6277005	SFRA-119
6277006	SFRA-120
6277007	SFRA-121
12010796	Method Blank (MB)
12010797	Laboratory Control Sample (LCS)
12010798	Laboratory Control Sample Duplicate (LCSD)
12010799	6277001(SFRA-115) Matrix Spike (MS)
12010800	6277001(SFRA-115) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6277001 (SFRA-115) - Batch 26287 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery Statement

Two MS recoveries for this SDG were not within the acceptance limits. The failures confirm in the matrix spike duplicate and are attributed to matrix interference. 12010799 (SFRA-115) and 12010800 (SFRA-115) - Batch 26287.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the

AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26287.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6277 CFA Work Order: 6277


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 30 JUN 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 6277001	Date Collected: 06/24/2014 12:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/25/2014 10:00	%Moisture: 14.7
Client ID: SFRA-115		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 20:24	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-7		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.11 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		413	pg/g	2.36	10.6
40321-76-4	1,2,3,7,8-PeCDD	U	1.57	pg/g	1.57	52.8
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.77	pg/g	2.77	52.8
57653-85-7	1,2,3,6,7,8-HxCDD	J	6.48	pg/g	2.72	52.8
19408-74-3	1,2,3,7,8,9-HxCDD	J	3.10	pg/g	2.91	52.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		85.7	pg/g	4.77	52.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1520	pg/g	9.99	106
51207-31-9	2,3,7,8-TCDF	J	5.30	pg/g	2.07	10.6
57117-41-6	1,2,3,7,8-PeCDF	U	1.22	pg/g	1.22	52.8
57117-31-4	2,3,4,7,8-PeCDF	U	1.14	pg/g	1.14	52.8
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.01	pg/g	2.01	52.8
57117-44-9	1,2,3,6,7,8-HxCDF	J	3.40	pg/g	1.95	52.8
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.08	pg/g	2.08	52.8
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.27	pg/g	3.27	52.8
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	28.5	pg/g	1.97	52.8
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3.67	pg/g	3.67	52.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	54.9	pg/g	8.17	106

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1840	2110	pg/g	86.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1780	2110	pg/g	84.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1880	2110	pg/g	89.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1820	2110	pg/g	86.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1770	2110	pg/g	84.1	(23%-140%)
13C-OCDD		2990	4220	pg/g	70.8	(17%-157%)
13C-2,3,7,8-TCDF		1960	2110	pg/g	92.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1840	2110	pg/g	87.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1920	2110	pg/g	90.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1940	2110	pg/g	91.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1950	2110	pg/g	92.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1900	2110	pg/g	90.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1740	2110	pg/g	82.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1810	2110	pg/g	85.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1660	2110	pg/g	78.7	(26%-138%)
37Cl-2,3,7,8-TCDD		216	211	pg/g	102	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 6277002	Date Collected: 06/24/2014 12:07	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/25/2014 10:00	%Moisture: 17.2
Client ID: SFRA-116		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 21:11	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-8		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		851	pg/g	2.87	11.3
40321-76-4	1,2,3,7,8-PeCDD	J	3.00	pg/g	2.06	56.5
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.48	pg/g	2.96	56.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	30.0	pg/g	2.80	56.5
19408-74-3	1,2,3,7,8,9-HxCDD	J	9.06	pg/g	3.05	56.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		364	pg/g	5.94	56.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9110	pg/g	12.7	113
51207-31-9	2,3,7,8-TCDF	J	8.24	pg/g	2.44	11.3
57117-41-6	1,2,3,7,8-PeCDF	J	1.51	pg/g	1.20	56.5
57117-31-4	2,3,4,7,8-PeCDF	J	2.98	pg/g	1.09	56.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	7.27	pg/g	7.27	56.5
57117-44-9	1,2,3,6,7,8-HxCDF	J	4.74	pg/g	1.93	56.5
60851-34-5	2,3,4,6,7,8-HxCDF	J	6.32	pg/g	2.01	56.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.23	pg/g	3.23	56.5
67562-39-4	1,2,3,4,6,7,8-HpCDF		93.8	pg/g	2.26	56.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	5.40	pg/g	3.73	56.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF		132	pg/g	6.46	113

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1950	2260	pg/g	86.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1950	2260	pg/g	86.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2160	2260	pg/g	95.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2170	2260	pg/g	96.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2110	2260	pg/g	93.5	(23%-140%)
13C-OCDD		3950	4520	pg/g	87.5	(17%-157%)
13C-2,3,7,8-TCDF		2120	2260	pg/g	93.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1990	2260	pg/g	88.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		2140	2260	pg/g	94.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2240	2260	pg/g	99.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2250	2260	pg/g	99.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2260	2260	pg/g	100	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2020	2260	pg/g	89.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2160	2260	pg/g	95.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2030	2260	pg/g	89.7	(26%-138%)
37Cl-2,3,7,8-TCDD		215	226	pg/g	95.2	(35%-197%)

Comments:

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 6277003	Date Collected: 06/24/2014 12:12	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/25/2014 10:00	%Moisture: 21.6
Client ID: SFRA-117		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 21:59	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-9		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1160	pg/g	2.53	12.3
40321-76-4	1,2,3,7,8-PeCDD	J	4.81	pg/g	2.60	61.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.99	pg/g	5.99	61.3
57653-85-7	1,2,3,6,7,8-HxCDD	J	57.8	pg/g	6.11	61.3
19408-74-3	1,2,3,7,8,9-HxCDD	J	16.7	pg/g	6.43	61.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		1150	pg/g	8.95	61.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		18100	pg/g	17.7	123
51207-31-9	2,3,7,8-TCDF	J	10.4	pg/g	3.61	12.3
57117-41-6	1,2,3,7,8-PeCDF	J	2.40	pg/g	1.51	61.3
57117-31-4	2,3,4,7,8-PeCDF	J	5.10	pg/g	1.38	61.3
70648-26-9	1,2,3,4,7,8-HxCDF	J	18.8	pg/g	2.75	61.3
57117-44-9	1,2,3,6,7,8-HxCDF	J	7.95	pg/g	2.70	61.3
60851-34-5	2,3,4,6,7,8-HxCDF	J	12.4	pg/g	2.75	61.3
72918-21-9	1,2,3,7,8,9-HxCDF	J	5.96	pg/g	4.27	61.3
67562-39-4	1,2,3,4,6,7,8-HpCDF		224	pg/g	3.41	61.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	18.7	pg/g	5.99	61.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF		474	pg/g	8.88	123

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1950	2450	pg/g	79.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1990	2450	pg/g	81.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2190	2450	pg/g	89.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2060	2450	pg/g	83.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2060	2450	pg/g	84.1	(23%-140%)
13C-OCDD		4020	4910	pg/g	82.0	(17%-157%)
13C-2,3,7,8-TCDF		2100	2450	pg/g	85.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		2030	2450	pg/g	82.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		2110	2450	pg/g	86.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2160	2450	pg/g	88.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2090	2450	pg/g	85.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2220	2450	pg/g	90.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1930	2450	pg/g	78.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2070	2450	pg/g	84.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1940	2450	pg/g	79.1	(26%-138%)
37Cl-2,3,7,8-TCDD		237	245	pg/g	96.8	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 6277004	Date Collected: 06/24/2014 12:17	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/25/2014 10:00	%Moisture: 19.1
Client ID: SFRA-118		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 22:47	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-10		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1140	pg/g	2.92	11.9
40321-76-4	1,2,3,7,8-PeCDD	U	2.33	pg/g	2.33	59.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	4.14	pg/g	4.14	59.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	27.9	pg/g	3.83	59.4
19408-74-3	1,2,3,7,8,9-HxCDD	J	8.56	pg/g	4.07	59.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		628	pg/g	8.27	59.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		15900	pg/g	20.3	119
51207-31-9	2,3,7,8-TCDF	J	8.30	pg/g	3.26	11.9
57117-41-6	1,2,3,7,8-PeCDF	J	2.26	pg/g	1.89	59.4
57117-31-4	2,3,4,7,8-PeCDF	J	3.02	pg/g	1.79	59.4
70648-26-9	1,2,3,4,7,8-HxCDF	J	8.51	pg/g	2.02	59.4
57117-44-9	1,2,3,6,7,8-HxCDF	J	3.78	pg/g	2.01	59.4
60851-34-5	2,3,4,6,7,8-HxCDF	J	5.04	pg/g	2.03	59.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.38	pg/g	3.38	59.4
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	2.73	59.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	6.30	pg/g	4.92	59.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		255	pg/g	7.32	119

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1990	2380	pg/g	83.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1950	2380	pg/g	82.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2370	2380	pg/g	99.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2070	2380	pg/g	87.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2260	2380	pg/g	95.0	(23%-140%)
13C-OCDD		4110	4750	pg/g	86.4	(17%-157%)
13C-2,3,7,8-TCDF		2130	2380	pg/g	89.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1990	2380	pg/g	83.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2110	2380	pg/g	88.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2420	2380	pg/g	102	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2310	2380	pg/g	97.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2440	2380	pg/g	103	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2100	2380	pg/g	88.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2280	2380	pg/g	96.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2110	2380	pg/g	88.6	(26%-138%)
37Cl-2,3,7,8-TCDD		239	238	pg/g	101	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 6277005	Date Collected: 06/23/2014 17:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/25/2014 10:00	%Moisture: 19.7
Client ID: SFRA-119		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 23:34	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-11		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		590	pg/g	1.99	10.5
40321-76-4	1,2,3,7,8-PeCDD	U	1.83	pg/g	1.83	52.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.76	pg/g	2.76	52.3
57653-85-7	1,2,3,6,7,8-HxCDD	J	10.2	pg/g	2.89	52.3
19408-74-3	1,2,3,7,8,9-HxCDD	J	3.79	pg/g	3.01	52.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		201	pg/g	7.20	52.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6610	pg/g	11.7	105
51207-31-9	2,3,7,8-TCDF	J	5.25	pg/g	2.30	10.5
57117-41-6	1,2,3,7,8-PeCDF	U	1.1	pg/g	1.10	52.3
57117-31-4	2,3,4,7,8-PeCDF	U	1.17	pg/g	1.17	52.3
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.41	pg/g	1.61	52.3
57117-44-9	1,2,3,6,7,8-HxCDF	J	2.26	pg/g	1.58	52.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.05	pg/g	2.05	52.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.68	pg/g	2.68	52.3
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	34.2	pg/g	1.83	52.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	4.56	pg/g	3.31	52.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	75.4	pg/g	6.03	105

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1710	2090	pg/g	81.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1640	2090	pg/g	78.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1890	2090	pg/g	90.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1760	2090	pg/g	84.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1870	2090	pg/g	89.5	(23%-140%)
13C-OCDD		3300	4190	pg/g	78.8	(17%-157%)
13C-2,3,7,8-TCDF		1830	2090	pg/g	87.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1640	2090	pg/g	78.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1730	2090	pg/g	82.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1980	2090	pg/g	94.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1890	2090	pg/g	90.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1940	2090	pg/g	92.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1730	2090	pg/g	82.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1870	2090	pg/g	89.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1730	2090	pg/g	82.6	(26%-138%)
37Cl-2,3,7,8-TCDD		202	209	pg/g	96.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 6277006	Date Collected: 06/24/2014 16:45	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/25/2014 10:00	%Moisture: 16.4
Client ID: SFRA-120		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/27/2014 00:22	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-12		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.27 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		669	pg/g	2.30	9.42
40321-76-4	1,2,3,7,8-PeCDD	U	1.8	pg/g	1.80	47.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	2.34	pg/g	2.34	47.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	12.8	pg/g	2.39	47.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	4.20	pg/g	2.51	47.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		270	pg/g	5.18	47.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5710	pg/g	10.2	94.2
51207-31-9	2,3,7,8-TCDF	J	4.61	pg/g	1.81	9.42
57117-41-6	1,2,3,7,8-PeCDF	U	.955	pg/g	0.955	47.1
57117-31-4	2,3,4,7,8-PeCDF	J	0.942	pg/g	0.902	47.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.86	pg/g	3.86	47.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.22	pg/g	2.22	47.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.96	pg/g	1.86	47.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.96	pg/g	2.96	47.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		47.9	pg/g	1.63	47.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	4.58	pg/g	2.90	47.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		119	pg/g	12.0	94.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1630	1880	pg/g	86.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1540	1880	pg/g	82.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1790	1880	pg/g	94.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1580	1880	pg/g	84.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1720	1880	pg/g	91.3	(23%-140%)
13C-OCDD		3080	3770	pg/g	81.8	(17%-157%)
13C-2,3,7,8-TCDF		1760	1880	pg/g	93.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1610	1880	pg/g	85.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1670	1880	pg/g	88.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1830	1880	pg/g	97.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1760	1880	pg/g	93.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1800	1880	pg/g	95.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1640	1880	pg/g	87.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1760	1880	pg/g	93.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1630	1880	pg/g	86.4	(26%-138%)
37Cl-2,3,7,8-TCDD		193	188	pg/g	102	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 6277007	Date Collected: 06/24/2014 16:50	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/25/2014 10:00	%Moisture: 18.8
Client ID: SFRA-121		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/27/2014 01:10	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-13		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.26 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1560	pg/g	3.13	9.77
40321-76-4	1,2,3,7,8-PeCDD	U	2.78	pg/g	2.78	48.9
39227-28-6	1,2,3,4,7,8-HxCDD	U	4.24	pg/g	4.24	48.9
57653-85-7	1,2,3,6,7,8-HxCDD	J	35.9	pg/g	4.16	48.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	10.5	pg/g	4.46	48.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		493	pg/g	7.54	48.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10100	pg/g	14.5	97.7
51207-31-9	2,3,7,8-TCDF	J	9.46	pg/g	2.81	9.77
57117-41-6	1,2,3,7,8-PeCDF	U	1.66	pg/g	1.66	48.9
57117-31-4	2,3,4,7,8-PeCDF	U	2.62	pg/g	2.62	48.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	7.68	pg/g	2.09	48.9
57117-44-9	1,2,3,6,7,8-HxCDF	J	5.10	pg/g	1.94	48.9
60851-34-5	2,3,4,6,7,8-HxCDF	J	6.90	pg/g	2.07	48.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.28	pg/g	3.28	48.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		114	pg/g	2.31	48.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	8.68	pg/g	4.16	48.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		204	pg/g	9.83	97.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1640	1950	pg/g	84.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1550	1950	pg/g	79.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1820	1950	pg/g	93.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1680	1950	pg/g	86.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1780	1950	pg/g	91.2	(23%-140%)
13C-OCDD		3250	3910	pg/g	83.0	(17%-157%)
13C-2,3,7,8-TCDF		1740	1950	pg/g	89.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1580	1950	pg/g	80.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1660	1950	pg/g	84.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1900	1950	pg/g	97.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1800	1950	pg/g	92.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1840	1950	pg/g	94.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1680	1950	pg/g	85.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1790	1950	pg/g	91.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1630	1950	pg/g	83.4	(26%-138%)
37Cl-2,3,7,8-TCDD		197	195	pg/g	101	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6277

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010797	LCS for batch 26285	13C-2,3,7,8-TCDD		80.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		77.9	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		90.7	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		87.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		85.4	(22%-166%)
		13C-OCDD		68.9	(13%-199%)
		13C-2,3,7,8-TCDF		88.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		79.4	(21%-192%)
		13C-2,3,4,7,8-PeCDF		86.0	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		94.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		93.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		92.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		81.3	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		87.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		77.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		93.7	(31%-191%)
12010798	LCSD for batch 26285	13C-2,3,7,8-TCDD		85.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		84.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		89.3	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		86.1	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		90.4	(22%-166%)
		13C-OCDD		78.3	(13%-199%)
		13C-2,3,7,8-TCDF		91.9	(22%-152%)
		13C-1,2,3,7,8-PeCDF		85.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		91.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		91.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		91.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		93.2	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		86.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		90.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		85.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		100	(31%-191%)
12010796	MB for batch 26285	13C-2,3,7,8-TCDD		85.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		92.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.3	(23%-140%)
		13C-OCDD		77.6	(17%-157%)
		13C-2,3,7,8-TCDF		91.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		94.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		92.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		89.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		103	(35%-197%)
6277001	SFRA-115	13C-2,3,7,8-TCDD		86.9	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6277

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6277001	SFRA-115	13C-1,2,3,7,8-PeCDD		84.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		89.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.1	(23%-140%)
		13C-OCDD		70.8	(17%-157%)
		13C-2,3,7,8-TCDF		92.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		90.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		91.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		102	(35%-197%)
6277002	SFRA-116	13C-2,3,7,8-TCDD		86.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		95.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		96.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.5	(23%-140%)
		13C-OCDD		87.5	(17%-157%)
		13C-2,3,7,8-TCDF		93.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		88.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		99.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		99.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		100	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		89.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		95.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.7	(26%-138%)
37Cl-2,3,7,8-TCDD		95.2	(35%-197%)		
6277003	SFRA-117	13C-2,3,7,8-TCDD		79.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		81.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		89.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.1	(23%-140%)
		13C-OCDD		82.0	(17%-157%)
		13C-2,3,7,8-TCDF		85.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		82.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		88.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		85.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.1	(26%-138%)
37Cl-2,3,7,8-TCDD		96.8	(35%-197%)		
6277004	SFRA-118	13C-2,3,7,8-TCDD		83.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		82.1	(25%-181%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6277

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6277004	SFRA-118	13C-1,2,3,4,7,8-HxCDD		99.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		87.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		95.0	(23%-140%)
		13C-OCDD		86.4	(17%-157%)
		13C-2,3,7,8-TCDF		89.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		102	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		97.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		103	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		88.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		96.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		88.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		101	(35%-197%)
		6277005	SFRA-119	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				78.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				90.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				84.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				89.5	(23%-140%)
13C-OCDD				78.8	(17%-157%)
13C-2,3,7,8-TCDF				87.3	(24%-169%)
13C-1,2,3,7,8-PeCDF				78.5	(24%-185%)
13C-2,3,4,7,8-PeCDF				82.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				94.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				90.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				92.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				82.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				89.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				82.6	(26%-138%)
37Cl-2,3,7,8-TCDD		96.3	(35%-197%)		
6277006	SFRA-120	13C-2,3,7,8-TCDD		86.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		82.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		94.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		84.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.3	(23%-140%)
		13C-OCDD		81.8	(17%-157%)
		13C-2,3,7,8-TCDF		93.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		97.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		93.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		95.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		93.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		86.4	(26%-138%)
37Cl-2,3,7,8-TCDD		102	(35%-197%)		
6277007	SFRA-121	13C-2,3,7,8-TCDD		84.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		93.3	(32%-141%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6277

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6277007	SFRA-121	13C-1,2,3,6,7,8-HxCDD		86.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.2	(23%-140%)
		13C-OCDD		83.0	(17%-157%)
		13C-2,3,7,8-TCDF		89.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		80.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		84.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		97.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		94.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		101	(35%-197%)
		12010799	SFRA-115(6277001MS)	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				82.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				94.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				90.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				90.6	(23%-140%)
13C-OCDD				77.8	(17%-157%)
13C-2,3,7,8-TCDF				90.8	(24%-169%)
13C-1,2,3,7,8-PeCDF				86.0	(24%-185%)
13C-2,3,4,7,8-PeCDF				89.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				98.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				98.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				96.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				85.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				92.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		84.6	(26%-138%)		
37Cl-2,3,7,8-TCDD		102	(35%-197%)		
12010800	SFRA-115(6277001MSD)	13C-2,3,7,8-TCDD		86.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		93.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.1	(23%-140%)
		13C-OCDD		79.9	(17%-157%)
		13C-2,3,7,8-TCDF		93.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		97.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		95.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		94.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		93.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		86.4	(26%-138%)		
37Cl-2,3,7,8-TCDD		97.2	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6277

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26285

Matrix: SOLID

Lab Sample ID: 12010797

Instrument: HRP763

Analysis Date: 06/26/2014 16:18

Dilution: 1

Analyst: JTF

Prep Batch ID: 26285

Batch ID: 26287

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.2	106	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	104	104	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	108	108	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	105	105	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	106	106	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	102	102	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	215	107	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	20.8	104	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	104	104	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	102	102	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	106	106	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	106	106	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	108	108	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	114	114	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	104	104	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	108	108	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	208	104	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6277 **Sample Type:** Laboratory Control Sample Duplicate
Client ID: LCSD for batch 26285 **Matrix:** SOLID
Lab Sample ID: 12010798
Instrument: HRP763 **Analysis Date:** 06/26/2014 17:05 **Dilution:** 1
Analyst: JTF **Prep Batch ID:** 26285
Batch ID: 26287

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.8	109	67-158	2.64	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	104	104	70-142	0.756	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	109	109	70-164	1.37	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	109	109	76-134	4.58	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	112	112	64-162	5.60	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	103	103	70-140	1.43	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	211	105	78-144	2.03	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	21.0	105	75-158	0.815	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	107	107	80-134	2.09	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	106	106	68-160	3.94	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	109	109	72-134	2.45	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	110	110	84-130	4.17	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	109	109	70-156	1.15	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	116	116	78-130	1.13	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	106	106	82-122	2.59	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	109	109	78-138	1.70	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	212	106	63-170	2.00	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6277
Client ID: SFRA-115(6277001MS)
Lab Sample ID: 12010799
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 14.7
Analysis Date: 06/27/2014 05:16
Prep Batch ID: 26285
Batch ID: 26287
Dilution: 1

CAS No.	Parmname	Amount Added		Spike Conc.		Recovery	Acceptance
		pg/g		pg/g		%	Limits
1746-01-6	MS	2,3,7,8-TCDD	223		349	-28.7 *	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	1120	U	1170	105	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	1120	U	1210	108	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	1120	J	1220	109	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	1120	J	1230	110	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	1120		1200	99.6	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	2230		2950	64 *	70-130
51207-31-9	MS	2,3,7,8-TCDF	223	J	236	103	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	1120	U	1180	106	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	1120	U	1180	106	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	1120	U	1250	112	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	1120	J	1180	105	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	1120	U	1210	108	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	1120	U	1310	118	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	1120	J	1200	105	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	1120	U	1230	110	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	2230	J	2370	104	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6277
Client ID: SFRA-115(6277001MSD)
Lab Sample ID: 12010800
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 14.7
Analysis Date: 06/27/2014 06:04
Prep Batch ID: 26285
Batch ID: 26287
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	202		288	-61.7 *	70-130	19.0	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1010	U	1060	104	70-130	10.5	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1010	U	1090	108	70-130	10.6	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1010	J	1020	101	70-130	18.1	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1010	J	1050	103	70-130	16.5	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1010		1010	91.4	70-130	17.1	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2020		2650	56.1 *	70-130	10.5	0-20
51207-31-9	MSD 2,3,7,8-TCDF	202	J	211	102	70-130	11.4	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1010	U	1090	108	70-130	7.94	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1010	U	1030	102	70-130	13.3	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1010	U	1060	104	70-130	17.3	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1010	J	1060	105	70-130	10.2	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1010	U	1060	105	70-130	12.5	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1010	U	1150	114	70-130	13.2	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1010	J	1040	101	70-130	14.2	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1010	U	1070	106	70-130	13.1	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2020	J	2120	102	70-130	11.2	0-20

Method Blank Summary

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SDG Number: 6277
Client ID: MB for batch 26285
Lab Sample ID: 12010796
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 25-JUN-14

Matrix: SOLID
Data File: b26jun14a-4
Analyzed: 06/26/14 17:53

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26285	12010797	b26jun14a-2	06/26/14	1618
02 LCSD for batch 26285	12010798	b26jun14a-3	06/26/14	1705
03 SFRA-115	6277001	b26jun14a-7	06/26/14	2024
04 SFRA-116	6277002	b26jun14a-8	06/26/14	2111
05 SFRA-117	6277003	b26jun14a-9	06/26/14	2159
06 SFRA-118	6277004	b26jun14a-10	06/26/14	2247
07 SFRA-119	6277005	b26jun14a-11	06/26/14	2334
08 SFRA-120	6277006	b26jun14a-12	06/27/14	0022
09 SFRA-121	6277007	b26jun14a-13	06/27/14	0110
10 SFRA-115(6277001MS)	12010799	b26jun14a_2-4	06/27/14	0516
11 SFRA-115(6277001MSD)	12010800	b26jun14a_2-5	06/27/14	0604

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010796		Matrix: SOLID
Client Sample: QC for batch 26285		
Client ID: MB for batch 26285		Prep Basis: As Received
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 17:53	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-4		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.196	pg/g	0.196	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.170	pg/g	0.120	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.208	pg/g	0.208	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.266	pg/g	0.266	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.226	pg/g	0.226	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.790	pg/g	0.522	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	5.60	pg/g	0.632	10.0
51207-31-9	2,3,7,8-TCDF	J	0.378	pg/g	0.141	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.186	pg/g	0.0738	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.172	pg/g	0.172	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.212	pg/g	0.136	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.184	pg/g	0.133	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.200	pg/g	0.143	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.22	pg/g	0.220	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.386	pg/g	0.150	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.242	pg/g	0.242	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.546	pg/g	0.546	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		170	200	pg/g	85.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		167	200	pg/g	83.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		186	200	pg/g	92.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		168	200	pg/g	83.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		181	200	pg/g	90.3	(23%-140%)
13C-OCDD		310	400	pg/g	77.6	(17%-157%)
13C-2,3,7,8-TCDF		182	200	pg/g	91.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		168	200	pg/g	84.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		184	200	pg/g	92.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		188	200	pg/g	94.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		185	200	pg/g	92.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		185	200	pg/g	92.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		172	200	pg/g	85.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		180	200	pg/g	89.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		166	200	pg/g	83.1	(26%-138%)
37Cl-2,3,7,8-TCDD		20.7	20.0	pg/g	103	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010797		Matrix: SOLID
Client Sample: QC for batch 26285		
Client ID: LCS for batch 26285		Prep Basis: As Received
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 16:18	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-2		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.2	pg/g	0.238	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.240	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		108	pg/g	0.422	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		105	pg/g	0.410	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		106	pg/g	0.442	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	0.722	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		215	pg/g	1.15	10.0
51207-31-9	2,3,7,8-TCDF		20.8	pg/g	0.181	1.00
57117-41-6	1,2,3,7,8-PeCDF		104	pg/g	0.232	5.00
57117-31-4	2,3,4,7,8-PeCDF		102	pg/g	0.220	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		106	pg/g	0.460	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		106	pg/g	0.442	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		108	pg/g	0.488	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		114	pg/g	0.764	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		104	pg/g	0.358	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		108	pg/g	0.682	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		208	pg/g	1.18	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		161	200	pg/g	80.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		156	200	pg/g	77.9	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		181	200	pg/g	90.7	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		176	200	pg/g	87.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		171	200	pg/g	85.4	(22%-166%)
13C-OCDD		276	400	pg/g	68.9	(13%-199%)
13C-2,3,7,8-TCDF		176	200	pg/g	88.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		159	200	pg/g	79.4	(21%-192%)
13C-2,3,4,7,8-PeCDF		172	200	pg/g	86.0	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		190	200	pg/g	94.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		187	200	pg/g	93.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		185	200	pg/g	92.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		163	200	pg/g	81.3	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		175	200	pg/g	87.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		156	200	pg/g	77.9	(20%-186%)
37Cl-2,3,7,8-TCDD		18.7	20.0	pg/g	93.7	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010798		Matrix: SOLID
Client Sample: QC for batch 26285		
Client ID: LCSDD for batch 26285		Prep Basis: As Received
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/26/2014 17:05	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a-3		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.8	pg/g	0.190	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.198	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		109	pg/g	0.304	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		109	pg/g	0.302	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		112	pg/g	0.322	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		103	pg/g	0.404	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		211	pg/g	0.810	10.0
51207-31-9	2,3,7,8-TCDF		21.0	pg/g	0.137	1.00
57117-41-6	1,2,3,7,8-PeCDF		107	pg/g	0.143	5.00
57117-31-4	2,3,4,7,8-PeCDF		106	pg/g	0.132	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		109	pg/g	0.382	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		110	pg/g	0.376	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		109	pg/g	0.392	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		116	pg/g	0.600	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		106	pg/g	0.394	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		109	pg/g	0.702	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		212	pg/g	0.790	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		171	200	pg/g	85.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		169	200	pg/g	84.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		179	200	pg/g	89.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		172	200	pg/g	86.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		181	200	pg/g	90.4	(22%-166%)
13C-OCDD		313	400	pg/g	78.3	(13%-199%)
13C-2,3,7,8-TCDF		184	200	pg/g	91.9	(22%-152%)
13C-1,2,3,7,8-PeCDF		171	200	pg/g	85.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		184	200	pg/g	91.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		184	200	pg/g	91.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		184	200	pg/g	91.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		186	200	pg/g	93.2	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		173	200	pg/g	86.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		182	200	pg/g	90.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		171	200	pg/g	85.5	(20%-186%)
37Cl-2,3,7,8-TCDD		20.0	20.0	pg/g	100	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010799	Date Collected: 06/24/2014 12:00	Matrix: SOLID
Client Sample: QC for batch 26285	Date Received: 06/25/2014 10:00	%Moisture: 14.7
Client ID: SFRA-115(6277001MS)		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/27/2014 05:16	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a_2-4		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		349	pg/g	2.30	11.2
40321-76-4	1,2,3,7,8-PeCDD		1170	pg/g	2.06	55.8
39227-28-6	1,2,3,4,7,8-HxCDD		1210	pg/g	5.56	55.8
57653-85-7	1,2,3,6,7,8-HxCDD		1220	pg/g	5.38	55.8
19408-74-3	1,2,3,7,8,9-HxCDD		1230	pg/g	5.78	55.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		1200	pg/g	5.38	55.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2950	pg/g	9.49	112
51207-31-9	2,3,7,8-TCDF		236	pg/g	1.75	11.2
57117-41-6	1,2,3,7,8-PeCDF		1180	pg/g	2.12	55.8
57117-31-4	2,3,4,7,8-PeCDF		1180	pg/g	2.00	55.8
70648-26-9	1,2,3,4,7,8-HxCDF		1250	pg/g	5.16	55.8
57117-44-9	1,2,3,6,7,8-HxCDF		1180	pg/g	4.98	55.8
60851-34-5	2,3,4,6,7,8-HxCDF		1210	pg/g	5.58	55.8
72918-21-9	1,2,3,7,8,9-HxCDF		1310	pg/g	8.62	55.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		1200	pg/g	4.44	55.8
55673-89-7	1,2,3,4,7,8,9-HpCDF		1230	pg/g	8.28	55.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2370	pg/g	10.4	112

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1890	2230	pg/g	84.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1840	2230	pg/g	82.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2110	2230	pg/g	94.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2020	2230	pg/g	90.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2020	2230	pg/g	90.6	(23%-140%)
13C-OCDD		3470	4460	pg/g	77.8	(17%-157%)
13C-2,3,7,8-TCDF		2030	2230	pg/g	90.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1920	2230	pg/g	86.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		2000	2230	pg/g	89.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2210	2230	pg/g	98.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2190	2230	pg/g	98.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2160	2230	pg/g	96.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1910	2230	pg/g	85.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2060	2230	pg/g	92.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1890	2230	pg/g	84.6	(26%-138%)
37Cl-2,3,7,8-TCDD		228	223	pg/g	102	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6277	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010800	Date Collected: 06/24/2014 12:00	Matrix: SOLID
Client Sample: QC for batch 26285	Date Received: 06/25/2014 10:00	%Moisture: 14.7
Client ID: SFRA-115(6277001MSD)		Prep Basis: Dry Weight
Batch ID: 26287	Method: EPA Method 1613B	
Run Date: 06/27/2014 06:04	Analyst: JTF	Instrument: HRP763
Data File: b26jun14a_2-5		Dilution: 1
Prep Batch: 26285	Prep Method: SW846 3540C	
Prep Date: 25-JUN-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		288	pg/g	1.76	10.1
40321-76-4	1,2,3,7,8-PeCDD		1060	pg/g	1.65	50.5
39227-28-6	1,2,3,4,7,8-HxCDD		1090	pg/g	4.00	50.5
57653-85-7	1,2,3,6,7,8-HxCDD		1020	pg/g	3.76	50.5
19408-74-3	1,2,3,7,8,9-HxCDD		1050	pg/g	4.10	50.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		1010	pg/g	4.10	50.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2650	pg/g	8.51	101
51207-31-9	2,3,7,8-TCDF		211	pg/g	1.48	10.1
57117-41-6	1,2,3,7,8-PeCDF		1090	pg/g	1.41	50.5
57117-31-4	2,3,4,7,8-PeCDF		1030	pg/g	1.33	50.5
70648-26-9	1,2,3,4,7,8-HxCDF		1060	pg/g	3.52	50.5
57117-44-9	1,2,3,6,7,8-HxCDF		1060	pg/g	3.29	50.5
60851-34-5	2,3,4,6,7,8-HxCDF		1060	pg/g	3.58	50.5
72918-21-9	1,2,3,7,8,9-HxCDF		1150	pg/g	5.47	50.5
67562-39-4	1,2,3,4,6,7,8-HpCDF		1040	pg/g	3.29	50.5
55673-89-7	1,2,3,4,7,8,9-HpCDF		1070	pg/g	5.84	50.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2120	pg/g	8.61	101

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1740	2020	pg/g	86.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		1750	2020	pg/g	86.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1880	2020	pg/g	93.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1780	2020	pg/g	88.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1900	2020	pg/g	94.1	(23%-140%)
13C-OCDD		3230	4040	pg/g	79.9	(17%-157%)
13C-2,3,7,8-TCDF		1890	2020	pg/g	93.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1720	2020	pg/g	84.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1920	2020	pg/g	94.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1970	2020	pg/g	97.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2020	pg/g	95.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2020	pg/g	94.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1760	2020	pg/g	87.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1890	2020	pg/g	93.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1740	2020	pg/g	86.4	(26%-138%)
37Cl-2,3,7,8-TCDD		196	202	pg/g	97.2	(35%-197%)

Comments:

July 02, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Development 1613B
Work Order: 6287

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 27, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Valerie Davis
Project Manager

Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC Wot# 6287
Chain of Custody and Analytical Request

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

CFA Work Order Number:

Client Name: Tetra Tech Phone #: 913-908-4649

Sample Analysis Requested ⁽⁶⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action Fax #:

Address: 20 Jamestown Farm DR, Ft. Mill, SC 29504

Collected by: R. Clayton Send Results To: luc.kinath@charter.net
relaytars@seagullenvirotech.com

Total number of containers	Sample Analysis Requested ⁽⁶⁾										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC	
	1	2	3	4	5	6	7	8	9	10			
1613B	4												

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽³⁾	Field Filtered ⁽⁴⁾	Sample Matrix ⁽⁴⁾	Total number of containers
SFRA-122	6-25-14	1450			S	1 X
SFRA-123	6-26-14	1345			S	1 X
SFRA-124 No Sample	6-26-14				S	1 X

TAT Requested: Normal: Rush: Specify: 72hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures			Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time
<u>R. Clayton</u>	<u>6-26-14</u>	<u>1645</u>	<u>[Signature]</u>	<u>6/27/14</u>	<u>1010</u>
2			2		
3			3		

Sample Shipping and Delivery Details
 CFA PM: Cynde Larkins
 Method of Shipment: Fed Ex Date Shipped: 6-26-14
 Airbill #: 8042 315 70848
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only
 Custody Seal Intact?
 YES NO
 Cooler Temp:
5.0 C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: <u>Tetra Tech</u>	Work Order: <u>6287</u>
Shipping Company: <u>Fedex</u>	Date/Time Received: <u>6/27/14</u>

Suspected Hazard Information	Yes	NA	No	DOE Site Sample Packages	Yes	NA	No*
Shipped as DOT Hazardous?			✓	Screened <0.5 mR/hr?			✓
Samples identified as Foreign Soil?			✓	Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

No.	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged containers leaking containers other (describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other (describe) <u>5.0</u>
4	Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	✓			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: Ch Date: 6/29/14

14303612

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6287**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26313
Clean Up Batch Number: 26312
Extraction Batch Number: 26311

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6287001	SFRA-122
6287002	SFRA-123
12010825	Method Blank (MB)
12010826	Laboratory Control Sample (LCS)
12010827	Laboratory Control Sample Duplicate (LCSD)
12010828	6287001(SFRA-122) Matrix Spike (MS)
12010829	6287001(SFRA-122) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6287001 (SFRA-122) - Batch 26313 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

Two MS recoveries for this SDG were not within the acceptance limits and can be attributed to matrix interference. 12010828 (SFRA-122) - Batch 26313.

Matrix Spike Duplicate (MSD) Recovery Statement

One MSD recovery for this SDG was not within the acceptance limits. The failure confirms in the MS and can be attributed to matrix interference. 12010829 (SFRA-122) - Batch 26313.

MS/MSD Relative Percent Difference (RPD) Statement

Two relative percent differences (RPDs) between the MS and MSD were not within the required acceptance limits. Sample data is validated based on acceptable LCS/LCSD results. 12010828 (SFRA-122) and 12010829 (SFRA-122) - Batch 26313.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the

AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26313.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

The following NCR was generated for this SDG: 644621 12010828 (SFRA-122) and 12010829 (SFRA-122)- Batch 26313.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6287 CFA Work Order: 6287


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 02 JUL 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6287	Client: TETR001	Project: TETR00111
Lab Sample ID: 6287001	Date Collected: 06/25/2014 14:50	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/27/2014 10:10	%Moisture: 23.1
Client ID: SFRA-122		Prep Basis: Dry Weight
Batch ID: 26313	Method: EPA Method 1613B	
Run Date: 06/30/2014 18:49	Analyst: JTF	Instrument: HRP763
Data File: b30jun14b-5		Dilution: 1
Prep Batch: 26311	Prep Method: SW846 3540C	
Prep Date: 27-JUN-14	Prep Aliquot: 1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		248	pg/g	3.46	13.0
40321-76-4	1,2,3,7,8-PeCDD	U	2.53	pg/g	2.53	65.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.98	pg/g	3.98	65.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	10.8	pg/g	4.03	65.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	4.4	pg/g	4.40	65.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		290	pg/g	10.9	65.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		16400	pg/g	27.8	130
51207-31-9	2,3,7,8-TCDF	U	3.3	pg/g	3.30	13.0
57117-41-6	1,2,3,7,8-PeCDF	U	1.9	pg/g	1.90	65.1
57117-31-4	2,3,4,7,8-PeCDF	U	1.64	pg/g	1.64	65.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.77	pg/g	3.77	65.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.06	pg/g	2.06	65.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.24	pg/g	2.24	65.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.2	pg/g	3.20	65.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	42.1	pg/g	4.22	65.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	6.69	pg/g	6.69	65.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	111	pg/g	11.2	130

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2190	2600	pg/g	84.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		2230	2600	pg/g	85.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		2080	2600	pg/g	79.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2230	2600	pg/g	85.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2370	2600	pg/g	90.9	(23%-140%)
13C-OCDD		4870	5200	pg/g	93.5	(17%-157%)
13C-2,3,7,8-TCDF		2400	2600	pg/g	92.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		2180	2600	pg/g	83.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		2260	2600	pg/g	86.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2040	2600	pg/g	78.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2140	2600	pg/g	82.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2150	2600	pg/g	82.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2190	2600	pg/g	84.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2140	2600	pg/g	82.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2310	2600	pg/g	88.9	(26%-138%)
37Cl-2,3,7,8-TCDD		236	260	pg/g	90.6	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6287	Client: TETR001	Project: TETR00111
Lab Sample ID: 6287002	Date Collected: 06/25/2014 13:45	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 06/27/2014 10:10	%Moisture: 14.3
Client ID: SFRA-123		Prep Basis: Dry Weight
Batch ID: 26313	Method: EPA Method 1613B	
Run Date: 06/30/2014 21:12	Analyst: JTF	Instrument: HRP763
Data File: b30jun14b-8		Dilution: 1
Prep Batch: 26311	Prep Method: SW846 3540C	
Prep Date: 27-JUN-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		411	pg/g	3.44	11.1
40321-76-4	1,2,3,7,8-PeCDD	U	2.35	pg/g	2.35	55.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.13	pg/g	5.13	55.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	6.42	pg/g	4.93	55.5
19408-74-3	1,2,3,7,8,9-HxCDD	U	5.33	pg/g	5.33	55.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		155	pg/g	9.06	55.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11000	pg/g	27.1	111
51207-31-9	2,3,7,8-TCDF	U	3.44	pg/g	3.44	11.1
57117-41-6	1,2,3,7,8-PeCDF	U	1.61	pg/g	1.61	55.5
57117-31-4	2,3,4,7,8-PeCDF	U	1.43	pg/g	1.43	55.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.35	pg/g	2.35	55.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.42	pg/g	2.42	55.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.51	pg/g	2.51	55.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.58	pg/g	3.58	55.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	22.3	pg/g	2.55	55.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3.93	pg/g	3.93	55.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	66.7	pg/g	8.86	111

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1440	2220	pg/g	65.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1520	2220	pg/g	68.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1490	2220	pg/g	67.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1600	2220	pg/g	72.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1700	2220	pg/g	76.4	(23%-140%)
13C-OCDD		3240	4440	pg/g	72.9	(17%-157%)
13C-2,3,7,8-TCDF		1540	2220	pg/g	69.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1440	2220	pg/g	65.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1550	2220	pg/g	69.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1490	2220	pg/g	66.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1440	2220	pg/g	64.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1530	2220	pg/g	69.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1490	2220	pg/g	66.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1480	2220	pg/g	66.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1630	2220	pg/g	73.4	(26%-138%)
37Cl-2,3,7,8-TCDD		166	222	pg/g	74.9	(35%-197%)

Comments:

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6287

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010826	LCS for batch 26311	13C-2,3,7,8-TCDD		78.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		78.8	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.6	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		78.4	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		85.3	(22%-166%)
		13C-OCDD		78.4	(13%-199%)
		13C-2,3,7,8-TCDF		85.9	(22%-152%)
		13C-1,2,3,7,8-PeCDF		74.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		81.3	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		78.9	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		79.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		81.2	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		80.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		77.4	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		81.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		90.9	(31%-191%)
12010827	LCSD for batch 26311	13C-2,3,7,8-TCDD		79.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		77.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		83.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		80.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		87.0	(22%-166%)
		13C-OCDD		80.1	(13%-199%)
		13C-2,3,7,8-TCDF		91.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		78.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		82.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		78.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.6	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		83.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		81.0	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		79.5	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		82.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		93.8	(31%-191%)
12010825	MB for batch 26311	13C-2,3,7,8-TCDD		76.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		71.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.4	(23%-140%)
		13C-OCDD		74.8	(17%-157%)
		13C-2,3,7,8-TCDF		88.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		71.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		75.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		83.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		85.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		81.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		90.0	(35%-197%)
6287001	SFRA-122	13C-2,3,7,8-TCDD		84.1	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6287

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6287001	SFRA-122	13C-1,2,3,7,8-PeCDD		85.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.9	(23%-140%)
		13C-OCDD		93.5	(17%-157%)
		13C-2,3,7,8-TCDF		92.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		82.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		88.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		90.6	(35%-197%)
12010828	SFRA-122(6287001MS)	13C-2,3,7,8-TCDD		83.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		88.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		75.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.1	(23%-140%)
		13C-OCDD		92.1	(17%-157%)
		13C-2,3,7,8-TCDF		89.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.7	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		84.4	(26%-138%)
37Cl-2,3,7,8-TCDD		104	(35%-197%)		
12010829	SFRA-122(6287001MSD)	13C-2,3,7,8-TCDD		82.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		87.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.9	(23%-140%)
		13C-OCDD		93.1	(17%-157%)
		13C-2,3,7,8-TCDF		85.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		90.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		81.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		86.8	(26%-138%)
37Cl-2,3,7,8-TCDD		96.1	(35%-197%)		
6287002	SFRA-123	13C-2,3,7,8-TCDD		65.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		68.5	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6287

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6287002	SFRA-123	13C-1,2,3,4,7,8-HxCDD		67.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		72.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.4	(23%-140%)
		13C-OCDD		72.9	(17%-157%)
		13C-2,3,7,8-TCDF		69.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		65.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		69.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		66.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		64.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		69.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		66.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		74.9	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6287

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26311

Matrix: SOLID

Lab Sample ID: 12010826

Instrument: HRP763

Analysis Date: 06/30/2014 16:26

Dilution: 1

Analyst: JTF

Prep Batch ID: 26311

Batch ID: 26313

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.3	101	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	98.8	98.8	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	103	103	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	98.2	98.2	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	110	110	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	100	100	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	194	97.2	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.4	97	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	97.2	97.2	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	93.4	93.4	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	104	104	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	105	105	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	104	104	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	110	110	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	102	102	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	106	106	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	209	104	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6287 **Sample Type:** Laboratory Control Sample Duplicate
Client ID: LCSD for batch 26311 **Matrix:** SOLID
Lab Sample ID: 12010827
Instrument: HRP763 **Analysis Date:** 06/30/2014 17:14 **Dilution:** 1
Analyst: JTF **Prep Batch ID:** 26311
Batch ID: 26313

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.3	101	67-158	0.0592	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	101	101	70-142	2.69	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	97.7	97.7	70-164	5.35	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	98.8	98.8	76-134	0.593	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	109	109	64-162	0.930	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	96.3	96.3	70-140	4.13	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	189	94.6	78-144	2.69	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.6	98	75-158	1.01	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	95.7	95.7	80-134	1.58	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	94.2	94.2	68-160	0.863	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	104	104	72-134	0.835	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	106	106	84-130	0.915	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	104	104	70-156	0.351	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	111	111	78-130	0.342	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	98.9	98.9	82-122	3.36	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	105	105	78-138	0.789	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	212	106	63-170	1.64	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6287
Client ID: SFRA-122(6287001MS)
Lab Sample ID: 12010828
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 23.1
Analysis Date: 06/30/2014 19:37
Prep Batch ID: 26311
Batch ID: 26313
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	MS 2,3,7,8-TCDD	248		1030	316 *	70-130
40321-76-4	MS 1,2,3,7,8-PeCDD	1240	U	1180	95.4	70-130
39227-28-6	MS 1,2,3,4,7,8-HxCDD	1240	U	1220	98.4	70-130
57653-85-7	MS 1,2,3,6,7,8-HxCDD	1240	J	1240	98.9	70-130
19408-74-3	MS 1,2,3,7,8,9-HxCDD	1240	U	1320	107	70-130
35822-46-9	MS 1,2,3,4,6,7,8-HpCDD	1240		1520	99.6	70-130
3268-87-9	MS 1,2,3,4,6,7,8,9-OCDD	2480		14900	-56.8 *	70-130
51207-31-9	MS 2,3,7,8-TCDF	248	U	246	99.4	70-130
57117-41-6	MS 1,2,3,7,8-PeCDF	1240	U	1210	97.8	70-130
57117-31-4	MS 2,3,4,7,8-PeCDF	1240	U	1170	94.2	70-130
70648-26-9	MS 1,2,3,4,7,8-HxCDF	1240	U	1340	108	70-130
57117-44-9	MS 1,2,3,6,7,8-HxCDF	1240	U	1230	99.4	70-130
60851-34-5	MS 2,3,4,6,7,8-HxCDF	1240	U	1230	99.6	70-130
72918-21-9	MS 1,2,3,7,8,9-HxCDF	1240	U	1340	108	70-130
67562-39-4	MS 1,2,3,4,6,7,8-HpCDF	1240	J	1330	104	70-130
55673-89-7	MS 1,2,3,4,7,8,9-HpCDF	1240	U	1290	104	70-130
39001-02-0	MS 1,2,3,4,6,7,8,9-OCDF	2480	J	2740	106	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6287
Client ID: SFRA-122(6287001MSD)
Lab Sample ID: 12010829
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 23.1
Analysis Date: 06/30/2014 20:25
Prep Batch ID: 26311
Batch ID: 26313
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	237		500	107	70-130	69.4 *	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1180	U	1140	96.7	70-130	3.38	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1180	U	1120	94.7	70-130	8.52	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1180	J	1150	96.3	70-130	7.24	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1180	U	1090	92.5	70-130	19.0	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1180		1490	101	70-130	2.37	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2370		30500	600 *	70-130	68.6 *	0-20
51207-31-9	MSD 2,3,7,8-TCDF	237	U	232	97.9	70-130	6.17	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1180	U	1110	94.2	70-130	8.40	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1180	U	1080	91.2	70-130	7.94	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1180	U	1220	103	70-130	9.28	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1180	U	1200	102	70-130	2.44	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1180	U	1210	102	70-130	1.84	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1180	U	1250	105	70-130	7.36	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1180	J	1230	100	70-130	8.17	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1180	U	1180	99.8	70-130	8.62	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2370	J	2540	103	70-130	7.64	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6287
Client ID: MB for batch 26311
Lab Sample ID: 12010825
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 27-JUN-14

Matrix: SOLID
Data File: b30jun14b-4
Analyzed: 06/30/14 18:01

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26311	12010826	b30jun14b-2	06/30/14	1626
02 LCSD for batch 26311	12010827	b30jun14b-3	06/30/14	1714
03 SFRA-122	6287001	b30jun14b-5	06/30/14	1849
04 SFRA-122(6287001MS)	12010828	b30jun14b-6	06/30/14	1937
05 SFRA-122(6287001MSD)	12010829	b30jun14b-7	06/30/14	2025
06 SFRA-123	6287002	b30jun14b-8	06/30/14	2112

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6287	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010825		Matrix: SOLID
Client Sample: QC for batch 26311		
Client ID: MB for batch 26311		Prep Basis: As Received
Batch ID: 26313	Method: EPA Method 1613B	
Run Date: 06/30/2014 18:01	Analyst: JTF	Instrument: HRP763
Data File: b30jun14b-4		Dilution: 1
Prep Batch: 26311	Prep Method: SW846 3540C	
Prep Date: 27-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.234	pg/g	0.234	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.157	pg/g	0.157	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.22	pg/g	0.220	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.204	pg/g	0.204	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.224	pg/g	0.224	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.294	pg/g	0.294	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.654	pg/g	0.654	10.0
51207-31-9	2,3,7,8-TCDF	U	.151	pg/g	0.151	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.14	pg/g	0.140	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.133	pg/g	0.133	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.146	pg/g	0.146	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.139	pg/g	0.139	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.145	pg/g	0.145	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.228	pg/g	0.228	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.232	pg/g	0.232	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.398	pg/g	0.398	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.722	pg/g	0.722	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		153	200	pg/g	76.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		143	200	pg/g	71.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		168	200	pg/g	84.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		161	200	pg/g	80.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		171	200	pg/g	85.4	(23%-140%)
13C-OCDD		299	400	pg/g	74.8	(17%-157%)
13C-2,3,7,8-TCDF		177	200	pg/g	88.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		143	200	pg/g	71.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		150	200	pg/g	75.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		166	200	pg/g	83.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		171	200	pg/g	85.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		171	200	pg/g	85.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		163	200	pg/g	81.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		157	200	pg/g	78.5	(26%-138%)
37Cl-2,3,7,8-TCDD		18.0	20.0	pg/g	90.0	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6287	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010826		Matrix: SOLID
Client Sample: QC for batch 26311		
Client ID: LCS for batch 26311		Prep Basis: As Received
Batch ID: 26313	Method: EPA Method 1613B	
Run Date: 06/30/2014 16:26	Analyst: JTF	Instrument: HRP763
Data File: b30jun14b-2		Dilution: 1
Prep Batch: 26311	Prep Method: SW846 3540C	
Prep Date: 27-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.274	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.8	pg/g	0.350	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		103	pg/g	0.826	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.2	pg/g	0.734	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		110	pg/g	0.822	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		100	pg/g	0.812	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		194	pg/g	1.36	10.0
51207-31-9	2,3,7,8-TCDF		19.4	pg/g	0.238	1.00
57117-41-6	1,2,3,7,8-PeCDF		97.2	pg/g	0.420	5.00
57117-31-4	2,3,4,7,8-PeCDF		93.4	pg/g	0.390	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		104	pg/g	0.678	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		105	pg/g	0.650	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		104	pg/g	0.670	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		110	pg/g	1.02	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		102	pg/g	0.728	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		106	pg/g	1.11	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		209	pg/g	1.18	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		157	200	pg/g	78.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		158	200	pg/g	78.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		157	200	pg/g	78.6	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		157	200	pg/g	78.4	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		171	200	pg/g	85.3	(22%-166%)
13C-OCDD		314	400	pg/g	78.4	(13%-199%)
13C-2,3,7,8-TCDF		172	200	pg/g	85.9	(22%-152%)
13C-1,2,3,7,8-PeCDF		149	200	pg/g	74.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		163	200	pg/g	81.3	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		158	200	pg/g	78.9	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		160	200	pg/g	79.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		162	200	pg/g	81.2	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		155	200	pg/g	77.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		163	200	pg/g	81.5	(20%-186%)
37Cl-2,3,7,8-TCDD		18.2	20.0	pg/g	90.9	(31%-191%)

Comments:**K Estimated Maximum Possible Concentration**

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6287	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010827		Matrix: SOLID
Client Sample: QC for batch 26311		
Client ID: LCSD for batch 26311		Prep Basis: As Received
Batch ID: 26313	Method: EPA Method 1613B	
Run Date: 06/30/2014 17:14	Analyst: JTF	Instrument: HRP763
Data File: b30jun14b-3		Dilution: 1
Prep Batch: 26311	Prep Method: SW846 3540C	
Prep Date: 27-JUN-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.254	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.334	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		97.7	pg/g	0.640	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		98.8	pg/g	0.656	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		109	pg/g	0.688	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.3	pg/g	0.960	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		189	pg/g	1.15	10.0
51207-31-9	2,3,7,8-TCDF		19.6	pg/g	0.216	1.00
57117-41-6	1,2,3,7,8-PeCDF		95.7	pg/g	0.306	5.00
57117-31-4	2,3,4,7,8-PeCDF		94.2	pg/g	0.290	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		104	pg/g	0.758	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		106	pg/g	0.724	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		104	pg/g	0.734	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		111	pg/g	1.10	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		98.9	pg/g	0.590	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		105	pg/g	0.932	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		212	pg/g	1.48	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		160	200	pg/g	79.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		155	200	pg/g	77.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		167	200	pg/g	83.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	80.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		174	200	pg/g	87.0	(22%-166%)
13C-OCDD		320	400	pg/g	80.1	(13%-199%)
13C-2,3,7,8-TCDF		183	200	pg/g	91.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		158	200	pg/g	78.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		165	200	pg/g	82.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		156	200	pg/g	78.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		161	200	pg/g	80.6	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		167	200	pg/g	83.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		162	200	pg/g	81.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		159	200	pg/g	79.5	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		164	200	pg/g	82.2	(20%-186%)
37Cl-2,3,7,8-TCDD		18.8	20.0	pg/g	93.8	(31%-191%)

Comments:**K Estimated Maximum Possible Concentration**

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6287	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010828	Date Collected: 06/25/2014 14:50	Matrix: SOLID
Client Sample: QC for batch 26311	Date Received: 06/27/2014 10:10	%Moisture: 23.1
Client ID: SFRA-122(6287001MS)		Prep Basis: Dry Weight
Batch ID: 26313	Method: EPA Method 1613B	
Run Date: 06/30/2014 19:37	Analyst: JTF	Instrument: HRP763
Data File: b30jun14b-6		Dilution: 1
Prep Batch: 26311	Prep Method: SW846 3540C	
Prep Date: 27-JUN-14	Prep Aliquot: 1.05 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1030	pg/g	3.72	12.4
40321-76-4	1,2,3,7,8-PeCDD		1180	pg/g	4.36	62.0
39227-28-6	1,2,3,4,7,8-HxCDD		1220	pg/g	7.46	62.0
57653-85-7	1,2,3,6,7,8-HxCDD		1240	pg/g	7.16	62.0
19408-74-3	1,2,3,7,8,9-HxCDD		1320	pg/g	7.73	62.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		1520	pg/g	11.7	62.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14900	pg/g	23.4	124
51207-31-9	2,3,7,8-TCDF		246	pg/g	3.82	12.4
57117-41-6	1,2,3,7,8-PeCDF		1210	pg/g	4.71	62.0
57117-31-4	2,3,4,7,8-PeCDF		1170	pg/g	4.44	62.0
70648-26-9	1,2,3,4,7,8-HxCDF		1340	pg/g	7.56	62.0
57117-44-9	1,2,3,6,7,8-HxCDF		1230	pg/g	6.72	62.0
60851-34-5	2,3,4,6,7,8-HxCDF		1230	pg/g	7.44	62.0
72918-21-9	1,2,3,7,8,9-HxCDF		1340	pg/g	9.99	62.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1330	pg/g	6.59	62.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1290	pg/g	10.2	62.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2740	pg/g	11.7	124

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2070	2480	pg/g	83.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2190	2480	pg/g	88.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1880	2480	pg/g	75.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1940	2480	pg/g	78.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2230	2480	pg/g	90.1	(23%-140%)
13C-OCDD		4570	4960	pg/g	92.1	(17%-157%)
13C-2,3,7,8-TCDF		2220	2480	pg/g	89.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2100	2480	pg/g	84.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		2170	2480	pg/g	87.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1810	2480	pg/g	73.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1890	2480	pg/g	76.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2000	2480	pg/g	80.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2000	2480	pg/g	80.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1900	2480	pg/g	76.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2090	2480	pg/g	84.4	(26%-138%)
37Cl-2,3,7,8-TCDD		257	248	pg/g	104	(35%-197%)

Comments:**K Estimated Maximum Possible Concentration**

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6287	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010829	Date Collected: 06/25/2014 14:50	Matrix: SOLID
Client Sample: QC for batch 26311	Date Received: 06/27/2014 10:10	%Moisture: 23.1
Client ID: SFRA-122(6287001MSD)		Prep Basis: Dry Weight
Batch ID: 26313	Method: EPA Method 1613B	
Run Date: 06/30/2014 20:25	Analyst: JTF	Instrument: HRP763
Data File: b30jun14b-7		Dilution: 1
Prep Batch: 26311	Prep Method: SW846 3540C	
Prep Date: 27-JUN-14	Prep Aliquot: 1.1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		500	pg/g	3.76	11.8
40321-76-4	1,2,3,7,8-PeCDD		1140	pg/g	4.59	59.1
39227-28-6	1,2,3,4,7,8-HxCDD		1120	pg/g	5.77	59.1
57653-85-7	1,2,3,6,7,8-HxCDD		1150	pg/g	5.58	59.1
19408-74-3	1,2,3,7,8,9-HxCDD		1090	pg/g	6.01	59.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		1490	pg/g	12.7	59.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		30500	pg/g	38.1	118
51207-31-9	2,3,7,8-TCDF		232	pg/g	4.83	11.8
57117-41-6	1,2,3,7,8-PeCDF		1110	pg/g	5.32	59.1
57117-31-4	2,3,4,7,8-PeCDF		1080	pg/g	4.61	59.1
70648-26-9	1,2,3,4,7,8-HxCDF		1220	pg/g	8.37	59.1
57117-44-9	1,2,3,6,7,8-HxCDF		1200	pg/g	8.49	59.1
60851-34-5	2,3,4,6,7,8-HxCDF		1210	pg/g	9.18	59.1
72918-21-9	1,2,3,7,8,9-HxCDF		1250	pg/g	13.2	59.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		1230	pg/g	8.26	59.1
55673-89-7	1,2,3,4,7,8,9-HpCDF		1180	pg/g	12.3	59.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2540	pg/g	14.3	118

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1940	2370	pg/g	82.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		2060	2370	pg/g	87.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1960	2370	pg/g	82.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2060	2370	pg/g	87.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2170	2370	pg/g	91.9	(23%-140%)
13C-OCDD		4410	4730	pg/g	93.1	(17%-157%)
13C-2,3,7,8-TCDF		2030	2370	pg/g	85.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1980	2370	pg/g	83.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2140	2370	pg/g	90.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1960	2370	pg/g	82.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2370	pg/g	81.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1990	2370	pg/g	84.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1940	2370	pg/g	81.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1890	2370	pg/g	79.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2050	2370	pg/g	86.8	(26%-138%)
37Cl-2,3,7,8-TCDD		227	237	pg/g	96.1	(35%-197%)

Comments:**K Estimated Maximum Possible Concentration**

July 07, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Development 1613B
Work Order: 6293

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 01, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Valerie Davis
Project Manager

Enclosures

Page: 1 of 1
 Project #: _____
 CFA Quote #: _____
 COC Number (1): _____
 PO Number: _____

Cape Fear Analytical, LLC *W01# 6293*
Chain of Custody and Analytical Request
 CFA Work Order Number: _____

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Phone #: 910-708-4649
 Project/Site Name: Spencer Forest Remedial Action Fax #: _____
 Address: 20 Jamstead Farm Rd Ferrisburg Mo 63034
 Collected by: R Clayton Send Results To: sklartha@tetratech.com
rdclay@spencerremediatech.com

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers											Comments Note: extra sample is required for sample specific QC										
							<-- Preservative Type (6)																				
<u>SFRA-124</u>	<u>6-26-14</u>	<u>1526</u>			<u>S</u>	<u>1</u>	<u>X</u>																				
<u>SFRA-125</u>	<u>6-30-14</u>	<u>1420</u>			<u>S</u>	<u>1</u>	<u>X</u>																				
<u>SFRA-126</u>	<u>6-30-14</u>	<u>1430</u>			<u>S</u>	<u>1</u>	<u>X</u>																				
<u>SFRA-127</u>	<u>6-30-14</u>	<u>1455</u>			<u>S</u>	<u>1</u>	<u>X</u>																				
SFRA-128																											

TAT Requested: Normal: X Rush: X Specify: 72 Hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Sample Collection Time Zone: Eastern Pacific Central Other Mountain

Chain of Custody Signatures					
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>R Clayton</u>	<u>6/30/14</u>	<u>1530</u>	<u>[Signature]</u>	<u>7/1/14</u>	<u>1030</u>

Sample Shipping and Delivery Details
 CFA PM: Cynda Gaskins
 Method of Shipment: FEDEX Date Shipped: 6-30-14
 Airbill #: 8042 3157 0789
 Airbill #: _____

1.) Chain of Custody Number = Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with e- Y - for yes the sample was field filtered or- N - for sample was not field filtered.
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank
WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO
 Cooler Temp:
3.9 C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: Tetra	Work Order: 6293
Shipping Company: Fedex	Date/Time Received: 7/1/14 1030

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?		<input checked="" type="checkbox"/>	

Air Witness: _____

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 3.4
4	Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: CKC Date: 7/1/14

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6293**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26338
Clean Up Batch Number: 26337
Extraction Batch Number: 26336

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6293001	SFRA-124
6293002	SFRA-125
6293003	SFRA-126
6293004	SFRA-127
12010846	Method Blank (MB)
12010847	Laboratory Control Sample (LCS)
12010848	Laboratory Control Sample Duplicate (LCSD)
12010849	6293001(SFRA-124) Matrix Spike (MS)
12010850	6293001(SFRA-124) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6293001 (SFRA-124) - Batch 26338 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Miscellaneous Information**Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6293 CFA Work Order: 6293

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 07 JUL 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 6293001	Date Collected: 06/26/2014 13:26	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/01/2014 10:30	%Moisture: 10.5
Client ID: SFRA-124		Prep Basis: Dry Weight
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 14:24	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-4		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 1.09 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		67.4	pg/g	3.01	10.2
40321-76-4	1,2,3,7,8-PeCDD	U	1.79	pg/g	1.79	51.2
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.22	pg/g	3.22	51.2
57653-85-7	1,2,3,6,7,8-HxCDD	J	7.58	pg/g	3.44	51.2
19408-74-3	1,2,3,7,8,9-HxCDD	U	3.55	pg/g	3.55	51.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		57.0	pg/g	5.06	51.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1430	pg/g	11.1	102
51207-31-9	2,3,7,8-TCDF	U	2.44	pg/g	2.44	10.2
57117-41-6	1,2,3,7,8-PeCDF	U	1.3	pg/g	1.30	51.2
57117-31-4	2,3,4,7,8-PeCDF	U	1.15	pg/g	1.15	51.2
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.76	pg/g	1.76	51.2
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.73	pg/g	1.73	51.2
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.87	pg/g	1.87	51.2
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.64	pg/g	2.64	51.2
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	26.3	pg/g	2.73	51.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	3.91	pg/g	3.91	51.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	30.7	pg/g	6.42	102

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1810	2050	pg/g	88.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1950	2050	pg/g	95.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1570	2050	pg/g	76.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1580	2050	pg/g	77.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1900	2050	pg/g	92.8	(23%-140%)
13C-OCDD		3650	4100	pg/g	89.1	(17%-157%)
13C-2,3,7,8-TCDF		1920	2050	pg/g	93.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1840	2050	pg/g	89.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1990	2050	pg/g	97.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1640	2050	pg/g	80.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1650	2050	pg/g	80.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1730	2050	pg/g	84.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1730	2050	pg/g	84.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1740	2050	pg/g	84.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1970	2050	pg/g	96.3	(26%-138%)
37Cl-2,3,7,8-TCDD		202	205	pg/g	98.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 6293002	Date Collected: 06/30/2014 14:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/01/2014 10:30	%Moisture: 21.4
Client ID: SFRA-125		Prep Basis: Dry Weight
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 16:48	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-7		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 1.23 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		476	pg/g	7.22	10.3
40321-76-4	1,2,3,7,8-PeCDD	U	4.43	pg/g	4.43	51.7
39227-28-6	1,2,3,4,7,8-HxCDD	J	12.5	pg/g	9.40	51.7
57653-85-7	1,2,3,6,7,8-HxCDD	J	43.1	pg/g	9.29	51.7
19408-74-3	1,2,3,7,8,9-HxCDD	J	15.3	pg/g	9.91	51.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		772	pg/g	17.3	51.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11100	pg/g	29.0	103
51207-31-9	2,3,7,8-TCDF	U	7.33	pg/g	7.33	10.3
57117-41-6	1,2,3,7,8-PeCDF	J	8.30	pg/g	4.78	51.7
57117-31-4	2,3,4,7,8-PeCDF	U	4.33	pg/g	4.33	51.7
70648-26-9	1,2,3,4,7,8-HxCDF	J	12.2	pg/g	5.28	51.7
57117-44-9	1,2,3,6,7,8-HxCDF	U	5.38	pg/g	5.38	51.7
60851-34-5	2,3,4,6,7,8-HxCDF	J	6.91	pg/g	5.51	51.7
72918-21-9	1,2,3,7,8,9-HxCDF	U	7.31	pg/g	7.31	51.7
67562-39-4	1,2,3,4,6,7,8-HpCDF		134	pg/g	5.71	51.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	10.7	pg/g	8.13	51.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF		385	pg/g	18.6	103

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1470	2070	pg/g	70.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1620	2070	pg/g	78.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1330	2070	pg/g	64.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1330	2070	pg/g	64.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1650	2070	pg/g	79.6	(23%-140%)
13C-OCDD		3330	4140	pg/g	80.3	(17%-157%)
13C-2,3,7,8-TCDF		1580	2070	pg/g	76.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1530	2070	pg/g	74.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1710	2070	pg/g	82.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1380	2070	pg/g	66.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1370	2070	pg/g	66.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1420	2070	pg/g	68.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1440	2070	pg/g	69.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1450	2070	pg/g	70.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1620	2070	pg/g	78.3	(26%-138%)
37Cl-2,3,7,8-TCDD		196	207	pg/g	94.8	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 6293003	Date Collected: 06/30/2014 14:30	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/01/2014 10:30	%Moisture: 16.3
Client ID: SFRA-126		Prep Basis: Dry Weight
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 17:35	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-8		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 1.23 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		897	pg/g	7.42	9.72
40321-76-4	1,2,3,7,8-PeCDD	U	3.6	pg/g	3.60	48.6
39227-28-6	1,2,3,4,7,8-HxCDD	J	12.1	pg/g	7.50	48.6
57653-85-7	1,2,3,6,7,8-HxCDD	J	35.7	pg/g	7.19	48.6
19408-74-3	1,2,3,7,8,9-HxCDD	J	11.2	pg/g	7.77	48.6
35822-46-9	1,2,3,4,6,7,8-HpCDD		870	pg/g	17.4	48.6
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10900	pg/g	34.2	97.2
51207-31-9	2,3,7,8-TCDF	U	7.91	pg/g	7.91	9.72
57117-41-6	1,2,3,7,8-PeCDF	J	16.6	pg/g	6.57	48.6
57117-31-4	2,3,4,7,8-PeCDF	U	5.85	pg/g	5.85	48.6
70648-26-9	1,2,3,4,7,8-HxCDF	J	21.6	pg/g	6.16	48.6
57117-44-9	1,2,3,6,7,8-HxCDF	U	8.28	pg/g	8.28	48.6
60851-34-5	2,3,4,6,7,8-HxCDF	J	8.77	pg/g	6.57	48.6
72918-21-9	1,2,3,7,8,9-HxCDF	U	8.65	pg/g	8.65	48.6
67562-39-4	1,2,3,4,6,7,8-HpCDF		284	pg/g	10.3	48.6
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	28.2	pg/g	15.5	48.6
39001-02-0	1,2,3,4,6,7,8,9-OCDF		689	pg/g	13.1	97.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1680	1940	pg/g	86.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1910	1940	pg/g	98.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1500	1940	pg/g	77.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1600	1940	pg/g	82.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1780	1940	pg/g	91.3	(23%-140%)
13C-OCDD		3770	3890	pg/g	96.9	(17%-157%)
13C-2,3,7,8-TCDF		1820	1940	pg/g	93.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1840	1940	pg/g	94.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1970	1940	pg/g	101	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1570	1940	pg/g	80.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1640	1940	pg/g	84.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1660	1940	pg/g	85.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1740	1940	pg/g	89.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1620	1940	pg/g	83.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1840	1940	pg/g	94.7	(26%-138%)
37Cl-2,3,7,8-TCDD		190	194	pg/g	98.0	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 6293004	Date Collected: 06/30/2014 14:55	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/01/2014 10:30	%Moisture: 20.9
Client ID: SFRA-127		Prep Basis: Dry Weight
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 18:23	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-9		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 1.06 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		158	pg/g	10.7	11.9
40321-76-4	1,2,3,7,8-PeCDD	U	3.99	pg/g	3.99	59.7
39227-28-6	1,2,3,4,7,8-HxCDD	U	6.56	pg/g	6.56	59.7
57653-85-7	1,2,3,6,7,8-HxCDD	J	11.6	pg/g	6.56	59.7
19408-74-3	1,2,3,7,8,9-HxCDD	U	6.97	pg/g	6.97	59.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		149	pg/g	11.1	59.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		6720	pg/g	21.9	119
51207-31-9	2,3,7,8-TCDF	U	4.32	pg/g	4.32	11.9
57117-41-6	1,2,3,7,8-PeCDF	U	2.7	pg/g	2.70	59.7
57117-31-4	2,3,4,7,8-PeCDF	U	2.39	pg/g	2.39	59.7
70648-26-9	1,2,3,4,7,8-HxCDF	U	3.91	pg/g	3.91	59.7
57117-44-9	1,2,3,6,7,8-HxCDF	U	3.99	pg/g	3.99	59.7
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.96	pg/g	3.96	59.7
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.99	pg/g	5.99	59.7
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	46.8	pg/g	10.4	59.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	16.2	pg/g	16.2	59.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	82.6	pg/g	12.1	119

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2170	2390	pg/g	91.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		2360	2390	pg/g	98.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1960	2390	pg/g	82.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1970	2390	pg/g	82.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2480	2390	pg/g	104	(23%-140%)
13C-OCDD		5290	4770	pg/g	111	(17%-157%)
13C-2,3,7,8-TCDF		2270	2390	pg/g	95.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		2210	2390	pg/g	92.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2330	2390	pg/g	97.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2030	2390	pg/g	85.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1990	2390	pg/g	83.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2110	2390	pg/g	88.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2140	2390	pg/g	89.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2170	2390	pg/g	91.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2450	2390	pg/g	103	(26%-138%)
37Cl-2,3,7,8-TCDD		253	239	pg/g	106	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6293

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010847	LCS for batch 26336	13C-2,3,7,8-TCDD		76.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		82.9	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		72.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		70.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.6	(22%-166%)
		13C-OCDD		76.9	(13%-199%)
		13C-2,3,7,8-TCDF		84.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		79.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		87.8	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.0	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		77.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		76.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		78.4	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		80.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		85.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		91.6	(31%-191%)
12010848	LCSD for batch 26336	13C-2,3,7,8-TCDD		59.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		61.8	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		54.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		60.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		62.3	(22%-166%)
		13C-OCDD		56.8	(13%-199%)
		13C-2,3,7,8-TCDF		69.0	(22%-152%)
		13C-1,2,3,7,8-PeCDF		59.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		65.6	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		57.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		62.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		61.9	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		60.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		60.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		63.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		89.8	(31%-191%)
12010846	MB for batch 26336	13C-2,3,7,8-TCDD		83.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		88.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.1	(23%-140%)
		13C-OCDD		86.8	(17%-157%)
		13C-2,3,7,8-TCDF		87.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		91.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		95.3	(35%-197%)
6293001	SFRA-124	13C-2,3,7,8-TCDD		88.5	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6293

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6293001	SFRA-124	13C-1,2,3,7,8-PeCDD		95.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		76.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.8	(23%-140%)
		13C-OCDD		89.1	(17%-157%)
		13C-2,3,7,8-TCDF		93.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		97.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		96.3	(26%-138%)
		37Cl-2,3,7,8-TCDD		98.3	(35%-197%)
12010849	SFRA-124(6293001MS)	13C-2,3,7,8-TCDD		86.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		92.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		76.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		101	(23%-140%)
		13C-OCDD		95.2	(17%-157%)
		13C-2,3,7,8-TCDF		88.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		91.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		103	(26%-138%)
37Cl-2,3,7,8-TCDD		103	(35%-197%)		
12010850	SFRA-124(6293001MSD)	13C-2,3,7,8-TCDD		86.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		93.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.7	(23%-140%)
		13C-OCDD		89.2	(17%-157%)
		13C-2,3,7,8-TCDF		92.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		97.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		81.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		86.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		92.9	(26%-138%)
37Cl-2,3,7,8-TCDD		99.9	(35%-197%)		
6293002	SFRA-125	13C-2,3,7,8-TCDD		70.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.4	(25%-181%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6293

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6293002	SFRA-125	13C-1,2,3,4,7,8-HxCDD		64.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		64.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.6	(23%-140%)
		13C-OCDD		80.3	(17%-157%)
		13C-2,3,7,8-TCDF		76.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		74.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		66.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		66.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		68.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		70.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.3	(26%-138%)
		37Cl-2,3,7,8-TCDD		94.8	(35%-197%)
		6293003	SFRA-126	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				98.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				77.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				82.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				91.3	(23%-140%)
13C-OCDD				96.9	(17%-157%)
13C-2,3,7,8-TCDF				93.5	(24%-169%)
13C-1,2,3,7,8-PeCDF				94.8	(24%-185%)
13C-2,3,4,7,8-PeCDF				101	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				80.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				84.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				85.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				89.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				83.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				94.7	(26%-138%)
37Cl-2,3,7,8-TCDD		98.0	(35%-197%)		
6293004	SFRA-127	13C-2,3,7,8-TCDD		91.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		98.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		104	(23%-140%)
		13C-OCDD		111	(17%-157%)
		13C-2,3,7,8-TCDF		95.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		97.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		89.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		103	(26%-138%)
37Cl-2,3,7,8-TCDD		106	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6293

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
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* Recovery outside Acceptance Limits
Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6293
Client ID: LCS for batch 26336
Lab Sample ID: 12010847
Instrument: HRP763
Analyst: JTF

Sample Type: Laboratory Control Sample
Matrix: SOIL
Analysis Date: 07/05/2014 12:02
Prep Batch ID: 26336
Batch ID: 26338
Dilution: 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.0	105	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	95.6	95.6	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	99.8	99.8	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	101	101	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	115	115	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	95.5	95.5	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	199	99.4	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	21.0	105	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	106	106	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	103	103	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	112	112	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	106	106	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	108	108	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	115	115	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	99.7	99.7	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	105	105	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	228	114	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6293
Client ID: LCSD for batch 26336
Lab Sample ID: 12010848
Instrument: HRP763
Analyst: JTF

Sample Type: Laboratory Control Sample Duplicate
Matrix: SOIL
Analysis Date: 07/05/2014 12:49
Prep Batch ID: 26336
Batch ID: 26338
Dilution: 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	21.8	109	67-158	3.76	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	95.3	95.3	70-142	0.316	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	101	101	70-164	1.31	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	99.6	99.6	76-134	1.59	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	108	108	64-162	6.18	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	97.2	97.2	70-140	1.72	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	205	102	78-144	3.06	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.4	96.8	75-158	7.97	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	105	105	80-134	0.273	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	102	102	68-160	1.28	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	106	106	72-134	5.76	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	104	104	84-130	2.27	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	108	108	70-156	0.157	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	109	109	78-130	4.58	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	103	103	82-122	2.92	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	103	103	78-138	1.86	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	234	117	63-170	2.46	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6293
Client ID: SFRA-124(6293001MS)
Lab Sample ID: 12010849
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOIL
%Moisture: 10.5
Analysis Date: 07/05/2014 15:12
Prep Batch ID: 26336
Batch ID: 26338
Dilution: 1

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits	
		pg/g		pg/g			
1746-01-6	MS	2,3,7,8-TCDD	207		284	105	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	1030	U	1000	96.8	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	1030	U	1100	106	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	1030	J	1030	98.6	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	1030	U	1190	115	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	1030		1090	100	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	2070		2900	71.1	70-130
51207-31-9	MS	2,3,7,8-TCDF	207	U	217	105	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	1030	U	1080	104	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	1030	U	1080	104	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	1030	U	1140	110	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	1030	U	1160	113	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	1030	U	1120	108	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	1030	U	1200	116	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	1030	J	1070	101	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	1030	U	1100	106	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	2070	J	2450	117	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6293
Client ID: SFRA-124(6293001MSD)
Lab Sample ID: 12010850
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOIL
%Moisture: 10.5
Analysis Date: 07/05/2014 16:00
Prep Batch ID: 26336
Batch ID: 26338
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	215		297	107	70-130	4.19	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1070	U	1060	98.6	70-130	5.56	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1070	U	1090	102	70-130	0.690	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1070	J	1090	101	70-130	6.00	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1070	U	1210	112	70-130	1.46	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1070		1150	101	70-130	4.69	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2150		3070	76.3	70-130	5.61	0-20
51207-31-9	MSD 2,3,7,8-TCDF	215	U	220	102	70-130	1.42	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1070	U	1150	107	70-130	6.72	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1070	U	1120	104	70-130	3.57	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1070	U	1240	115	70-130	8.32	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1070	U	1150	107	70-130	0.820	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1070	U	1200	111	70-130	6.48	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1070	U	1280	119	70-130	6.25	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1070	J	1110	101	70-130	4.14	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1070	U	1120	104	70-130	1.62	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2150	J	2450	112	70-130	0.0393	0-20

Method Blank Summary

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SDG Number: 6293
Client ID: MB for batch 26336
Lab Sample ID: 12010846
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 01-JUL-14

Matrix: SOIL
Data File: b04jul14b_3-3
Analyzed: 07/05/14 13:37

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26336	12010847	b04jul14b_3-1	07/05/14	1202
02 LCSD for batch 26336	12010848	b04jul14b_3-2	07/05/14	1249
03 SFRA-124	6293001	b04jul14b_3-4	07/05/14	1424
04 SFRA-124(6293001MS)	12010849	b04jul14b_3-5	07/05/14	1512
05 SFRA-124(6293001MSD)	12010850	b04jul14b_3-6	07/05/14	1600
06 SFRA-125	6293002	b04jul14b_3-7	07/05/14	1648
07 SFRA-126	6293003	b04jul14b_3-8	07/05/14	1735
08 SFRA-127	6293004	b04jul14b_3-9	07/05/14	1823

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010846		Matrix: SOIL
Client Sample: QC for batch 26336		
Client ID: MB for batch 26336		Prep Basis: As Received
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 13:37	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-3		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.568	pg/g	0.568	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.302	pg/g	0.302	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.442	pg/g	0.442	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.44	pg/g	0.440	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.466	pg/g	0.466	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.654	pg/g	0.654	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	1.37	pg/g	1.27	10.0
51207-31-9	2,3,7,8-TCDF	U	.414	pg/g	0.414	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.222	pg/g	0.222	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.184	pg/g	0.184	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.242	pg/g	0.242	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.226	pg/g	0.226	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.226	pg/g	0.226	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.338	pg/g	0.338	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.38	pg/g	0.380	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.57	pg/g	0.570	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.13	pg/g	1.13	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		167	200	pg/g	83.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		176	200	pg/g	88.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		147	200	pg/g	73.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	78.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		178	200	pg/g	89.1	(23%-140%)
13C-OCDD		347	400	pg/g	86.8	(17%-157%)
13C-2,3,7,8-TCDF		174	200	pg/g	87.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		169	200	pg/g	84.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		183	200	pg/g	91.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		161	200	pg/g	80.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		161	200	pg/g	80.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		169	200	pg/g	84.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		182	200	pg/g	91.0	(26%-138%)
37Cl-2,3,7,8-TCDD		19.1	20.0	pg/g	95.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010847		Matrix: SOIL
Client Sample: QC for batch 26336		
Client ID: LCS for batch 26336		Prep Basis: As Received
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 12:02	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-1		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.0	pg/g	0.562	1.00
40321-76-4	1,2,3,7,8-PeCDD		95.6	pg/g	0.526	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		99.8	pg/g	0.796	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		101	pg/g	0.834	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		115	pg/g	0.866	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.5	pg/g	1.32	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		199	pg/g	2.20	10.0
51207-31-9	2,3,7,8-TCDF		21.0	pg/g	0.464	1.00
57117-41-6	1,2,3,7,8-PeCDF		106	pg/g	0.532	5.00
57117-31-4	2,3,4,7,8-PeCDF		103	pg/g	0.460	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		112	pg/g	1.15	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		106	pg/g	1.02	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		108	pg/g	1.11	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		115	pg/g	1.66	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		99.7	pg/g	0.942	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		105	pg/g	1.52	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		228	pg/g	2.54	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		153	200	pg/g	76.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		166	200	pg/g	82.9	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		145	200	pg/g	72.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		142	200	pg/g	70.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		169	200	pg/g	84.6	(22%-166%)
13C-OCDD		308	400	pg/g	76.9	(13%-199%)
13C-2,3,7,8-TCDF		168	200	pg/g	84.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		159	200	pg/g	79.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		176	200	pg/g	87.8	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		144	200	pg/g	72.0	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		155	200	pg/g	77.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		153	200	pg/g	76.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		157	200	pg/g	78.4	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		160	200	pg/g	80.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		171	200	pg/g	85.3	(20%-186%)
37Cl-2,3,7,8-TCDD		18.3	20.0	pg/g	91.6	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010848		Matrix: SOIL
Client Sample: QC for batch 26336		
Client ID: LCSD for batch 26336		Prep Basis: As Received
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 12:49	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-2		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.8	pg/g	0.662	1.00
40321-76-4	1,2,3,7,8-PeCDD		95.3	pg/g	0.856	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		101	pg/g	1.00	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		99.6	pg/g	0.920	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		108	pg/g	1.01	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		97.2	pg/g	1.73	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		205	pg/g	2.64	10.0
51207-31-9	2,3,7,8-TCDF		19.4	pg/g	0.530	1.00
57117-41-6	1,2,3,7,8-PeCDF		105	pg/g	0.706	5.00
57117-31-4	2,3,4,7,8-PeCDF		102	pg/g	0.666	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		106	pg/g	1.51	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		104	pg/g	1.40	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		108	pg/g	1.60	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		109	pg/g	2.28	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		103	pg/g	1.14	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		103	pg/g	1.85	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		234	pg/g	3.48	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		119	200	pg/g	59.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		124	200	pg/g	61.8	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		110	200	pg/g	54.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		121	200	pg/g	60.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		125	200	pg/g	62.3	(22%-166%)
13C-OCDD		227	400	pg/g	56.8	(13%-199%)
13C-2,3,7,8-TCDF		138	200	pg/g	69.0	(22%-152%)
13C-1,2,3,7,8-PeCDF		120	200	pg/g	59.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		131	200	pg/g	65.6	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		115	200	pg/g	57.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		125	200	pg/g	62.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		124	200	pg/g	61.9	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		122	200	pg/g	60.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		121	200	pg/g	60.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		126	200	pg/g	63.1	(20%-186%)
37Cl-2,3,7,8-TCDD		18.0	20.0	pg/g	89.8	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010849	Date Collected: 06/26/2014 13:26	Matrix: SOIL
Client Sample: QC for batch 26336	Date Received: 07/01/2014 10:30	%Moisture: 10.5
Client ID: SFRA-124(6293001MS)		Prep Basis: Dry Weight
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 15:12	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-5		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		284	pg/g	4.20	10.3
40321-76-4	1,2,3,7,8-PeCDD		1000	pg/g	4.82	51.7
39227-28-6	1,2,3,4,7,8-HxCDD		1100	pg/g	10.2	51.7
57653-85-7	1,2,3,6,7,8-HxCDD		1030	pg/g	10.6	51.7
19408-74-3	1,2,3,7,8,9-HxCDD		1190	pg/g	11.0	51.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		1090	pg/g	8.96	51.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2900	pg/g	15.1	103
51207-31-9	2,3,7,8-TCDF		217	pg/g	3.76	10.3
57117-41-6	1,2,3,7,8-PeCDF		1080	pg/g	6.27	51.7
57117-31-4	2,3,4,7,8-PeCDF		1080	pg/g	6.14	51.7
70648-26-9	1,2,3,4,7,8-HxCDF		1140	pg/g	9.97	51.7
57117-44-9	1,2,3,6,7,8-HxCDF		1160	pg/g	9.95	51.7
60851-34-5	2,3,4,6,7,8-HxCDF		1120	pg/g	10.1	51.7
72918-21-9	1,2,3,7,8,9-HxCDF		1200	pg/g	15.0	51.7
67562-39-4	1,2,3,4,6,7,8-HpCDF		1070	pg/g	6.99	51.7
55673-89-7	1,2,3,4,7,8,9-HpCDF		1100	pg/g	9.04	51.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2450	pg/g	16.3	103

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1780	2070	pg/g	86.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1900	2070	pg/g	92.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1570	2070	pg/g	76.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1600	2070	pg/g	77.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2090	2070	pg/g	101	(23%-140%)
13C-OCDD		3940	4140	pg/g	95.2	(17%-157%)
13C-2,3,7,8-TCDF		1840	2070	pg/g	88.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1880	2070	pg/g	91.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1960	2070	pg/g	94.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1670	2070	pg/g	80.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1660	2070	pg/g	80.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1750	2070	pg/g	84.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1730	2070	pg/g	83.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1740	2070	pg/g	84.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2140	2070	pg/g	103	(26%-138%)
37Cl-2,3,7,8-TCDD		212	207	pg/g	103	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
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SDG Number: 6293	Client: TETR001	Project: TETR00111
Lab Sample ID: 12010850	Date Collected: 06/26/2014 13:26	Matrix: SOIL
Client Sample: QC for batch 26336	Date Received: 07/01/2014 10:30	%Moisture: 10.5
Client ID: SFRA-124(6293001MSD)		Prep Basis: Dry Weight
Batch ID: 26338	Method: EPA Method 1613B	
Run Date: 07/05/2014 16:00	Analyst: JTF	Instrument: HRP763
Data File: b04jul14b_3-6		Dilution: 1
Prep Batch: 26336	Prep Method: SW846 3540C	
Prep Date: 01-JUL-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		297	pg/g	5.13	10.7
40321-76-4	1,2,3,7,8-PeCDD		1060	pg/g	4.27	53.7
39227-28-6	1,2,3,4,7,8-HxCDD		1090	pg/g	10.4	53.7
57653-85-7	1,2,3,6,7,8-HxCDD		1090	pg/g	11.2	53.7
19408-74-3	1,2,3,7,8,9-HxCDD		1210	pg/g	11.5	53.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		1150	pg/g	10.4	53.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		3070	pg/g	18.9	107
51207-31-9	2,3,7,8-TCDF		220	pg/g	3.91	10.7
57117-41-6	1,2,3,7,8-PeCDF		1150	pg/g	5.91	53.7
57117-31-4	2,3,4,7,8-PeCDF		1120	pg/g	5.31	53.7
70648-26-9	1,2,3,4,7,8-HxCDF		1240	pg/g	10.7	53.7
57117-44-9	1,2,3,6,7,8-HxCDF		1150	pg/g	10.6	53.7
60851-34-5	2,3,4,6,7,8-HxCDF		1200	pg/g	11.3	53.7
72918-21-9	1,2,3,7,8,9-HxCDF		1280	pg/g	16.8	53.7
67562-39-4	1,2,3,4,6,7,8-HpCDF		1110	pg/g	9.26	53.7
55673-89-7	1,2,3,4,7,8,9-HpCDF		1120	pg/g	14.2	53.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2450	pg/g	19.6	107

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1860	2150	pg/g	86.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		2020	2150	pg/g	93.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1750	2150	pg/g	81.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1580	2150	pg/g	73.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2010	2150	pg/g	93.7	(23%-140%)
13C-OCDD		3830	4300	pg/g	89.2	(17%-157%)
13C-2,3,7,8-TCDF		1980	2150	pg/g	92.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1920	2150	pg/g	89.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		2080	2150	pg/g	97.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1710	2150	pg/g	79.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1760	2150	pg/g	81.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1750	2150	pg/g	81.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1760	2150	pg/g	81.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1850	2150	pg/g	86.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1990	2150	pg/g	92.9	(26%-138%)
37Cl-2,3,7,8-TCDD		215	215	pg/g	99.9	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
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SDG Number: 6302	Client: TETR001	Project: TETR00114
Lab Sample ID: 6302001	Date Collected: 07/01/2014 09:55	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/03/2014 10:50	%Moisture: 25.9
Client ID: SFRA-129		Prep Basis: Dry Weight
Batch ID: 26346	Method: EPA Method 1613B	
Run Date: 07/08/2014 18:29	Analyst: JTF	Instrument: HRP763
Data File: b07jul14a_3-9		Dilution: 1
Prep Batch: 26344	Prep Method: SW846 3540C	
Prep Date: 07-JUL-14	Prep Aliquot: 1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		350	pg/g	9.63	13.5
40321-76-4	1,2,3,7,8-PeCDD	U	4.99	pg/g	4.99	67.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	8.53	pg/g	8.53	67.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	16.0	pg/g	7.66	67.5
19408-74-3	1,2,3,7,8,9-HxCDD	U	8.45	pg/g	8.45	67.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		242	pg/g	26.0	67.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		17600	pg/g	77.4	135
51207-31-9	2,3,7,8-TCDF	U	7.88	pg/g	7.88	13.5
57117-41-6	1,2,3,7,8-PeCDF	U	4.96	pg/g	4.96	67.5
57117-31-4	2,3,4,7,8-PeCDF	U	3.99	pg/g	3.99	67.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	6.23	pg/g	6.23	67.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	5.83	pg/g	5.83	67.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	6.42	pg/g	6.42	67.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	8.88	pg/g	8.88	67.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	39.6	pg/g	5.69	67.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	9.44	pg/g	9.44	67.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	116	pg/g	20.7	135

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2240	2700	pg/g	82.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		2630	2700	pg/g	97.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1910	2700	pg/g	70.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2380	2700	pg/g	88.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2500	2700	pg/g	92.8	(23%-140%)
13C-OCDD		5010	5400	pg/g	92.8	(17%-157%)
13C-2,3,7,8-TCDF		2360	2700	pg/g	87.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2540	2700	pg/g	94.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		2780	2700	pg/g	103	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2050	2700	pg/g	75.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2240	2700	pg/g	83.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2230	2700	pg/g	82.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2320	2700	pg/g	86.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2430	2700	pg/g	90.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2590	2700	pg/g	96.1	(26%-138%)
37Cl-2,3,7,8-TCDD		262	270	pg/g	97.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

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Sample Summary**

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SDG Number: 6302	Client: TETR001	Project: TETR00114
Lab Sample ID: 6302002	Date Collected: 07/02/2014 09:10	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/03/2014 10:50	%Moisture: 23.1
Client ID: SFRA-130		Prep Basis: Dry Weight
Batch ID: 26346	Method: EPA Method 1613B	Instrument: HRP763
Run Date: 07/08/2014 19:17	Analyst: JTF	Dilution: 1
Data File: b07jul14a_3-10		
Prep Batch: 26344	Prep Method: SW846 3540C	
Prep Date: 07-JUL-14	Prep Aliquot: 1.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		505	pg/g	6.44	11.3
40321-76-4	1,2,3,7,8-PeCDD	U	4.36	pg/g	4.36	56.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	9.43	pg/g	9.43	56.5
57653-85-7	1,2,3,6,7,8-HxCDD	J	12.4	pg/g	8.77	56.5
19408-74-3	1,2,3,7,8,9-HxCDD	U	9.54	pg/g	9.54	56.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		297	pg/g	20.1	56.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		26900	pg/g	52.9	113
51207-31-9	2,3,7,8-TCDF	U	7.14	pg/g	7.14	11.3
57117-41-6	1,2,3,7,8-PeCDF	U	3.05	pg/g	3.05	56.5
57117-31-4	2,3,4,7,8-PeCDF	U	2.76	pg/g	2.76	56.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	4.41	pg/g	4.41	56.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	4.11	pg/g	4.11	56.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	4.54	pg/g	4.54	56.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	5.92	pg/g	5.92	56.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	39.3	pg/g	5.36	56.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	8.23	pg/g	8.23	56.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	89.6	pg/g	13.0	113

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1850	2260	pg/g	81.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		2060	2260	pg/g	91.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1560	2260	pg/g	69.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1960	2260	pg/g	86.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2000	2260	pg/g	88.3	(23%-140%)
13C-OCDD		4200	4520	pg/g	92.9	(17%-157%)
13C-2,3,7,8-TCDF		1930	2260	pg/g	85.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1970	2260	pg/g	87.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		2250	2260	pg/g	99.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1690	2260	pg/g	74.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1920	2260	pg/g	84.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1880	2260	pg/g	83.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1970	2260	pg/g	87.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1970	2260	pg/g	87.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2090	2260	pg/g	92.7	(26%-138%)
37Cl-2,3,7,8-TCDD		210	226	pg/g	93.0	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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SDG Number: 6302	Client: TETR001	Project: TETR00114
Lab Sample ID: 6302003	Date Collected: 07/02/2014 14:35	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/03/2014 10:50	%Moisture: 27.5
Client ID: SFRA-131		Prep Basis: Dry Weight
Batch ID: 26346	Method: EPA Method 1613B	
Run Date: 07/08/2014 20:05	Analyst: JTF	Instrument: HRP763
Data File: b07jul14a_3-11		Dilution: 1
Prep Batch: 26344	Prep Method: SW846 3540C	
Prep Date: 07-JUL-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	E	10100	pg/g	16.0	11.6
40321-76-4	1,2,3,7,8-PeCDD	U	9.27	pg/g	9.27	57.9
39227-28-6	1,2,3,4,7,8-HxCDD	U	16.4	pg/g	16.4	57.9
57653-85-7	1,2,3,6,7,8-HxCDD		113	pg/g	14.7	57.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	46.7	pg/g	16.4	57.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		1180	pg/g	22.7	57.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		16600	pg/g	56.5	116
51207-31-9	2,3,7,8-TCDF		70.8	pg/g	10.5	11.6
57117-41-6	1,2,3,7,8-PeCDF	U	5.49	pg/g	5.49	57.9
57117-31-4	2,3,4,7,8-PeCDF	J	12.1	pg/g	4.94	57.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	24.1	pg/g	12.1	57.9
57117-44-9	1,2,3,6,7,8-HxCDF	U	10.7	pg/g	10.7	57.9
60851-34-5	2,3,4,6,7,8-HxCDF	J	16.4	pg/g	11.6	57.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	17.8	pg/g	17.8	57.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		360	pg/g	9.06	57.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	21.3	pg/g	13.8	57.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		425	pg/g	21.1	116

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2070	2320	pg/g	89.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		2260	2320	pg/g	97.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1870	2320	pg/g	80.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1920	2320	pg/g	83.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2180	2320	pg/g	94.2	(23%-140%)
13C-OCDD		4370	4640	pg/g	94.3	(17%-157%)
13C-2,3,7,8-TCDF		2210	2320	pg/g	95.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		2200	2320	pg/g	94.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		2310	2320	pg/g	99.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1980	2320	pg/g	85.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2080	2320	pg/g	89.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2110	2320	pg/g	90.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2090	2320	pg/g	90.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2140	2320	pg/g	92.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2230	2320	pg/g	96.0	(26%-138%)
37Cl-2,3,7,8-TCDD		285	232	pg/g	123	(35%-197%)

Comments:**E** Value is estimated - Concentration of the target analyte exceeds the instrument calibration range**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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SDG Number: 6302	Client: TETR001	Project: TETR00114
Lab Sample ID: 6302004	Date Collected: 07/02/2014 14:30	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/03/2014 10:50	%Moisture: 13.2
Client ID: SFRA-132		Prep Basis: Dry Weight
Batch ID: 26346	Method: EPA Method 1613B	
Run Date: 07/08/2014 20:53	Analyst: JTF	Instrument: HRP763
Data File: b07jul14a_3-12		Dilution: 1
Prep Batch: 26344	Prep Method: SW846 3540C	
Prep Date: 07-JUL-14	Prep Aliquot: 1.39 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	E	4560	pg/g	8.67	8.29
40321-76-4	1,2,3,7,8-PeCDD	U	4.79	pg/g	4.79	41.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	7.81	pg/g	7.81	41.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	20.6	pg/g	7.21	41.4
19408-74-3	1,2,3,7,8,9-HxCDD	U	7.92	pg/g	7.92	41.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		444	pg/g	13.4	41.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10500	pg/g	30.8	82.9
51207-31-9	2,3,7,8-TCDF		31.7	pg/g	6.94	8.29
57117-41-6	1,2,3,7,8-PeCDF	U	2.95	pg/g	2.95	41.4
57117-31-4	2,3,4,7,8-PeCDF	U	2.59	pg/g	2.59	41.4
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.89	pg/g	3.25	41.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	3.45	pg/g	3.45	41.4
60851-34-5	2,3,4,6,7,8-HxCDF	J	5.68	pg/g	3.28	41.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.89	pg/g	4.89	41.4
67562-39-4	1,2,3,4,6,7,8-HpCDF		87.5	pg/g	4.46	41.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	7.41	pg/g	7.41	41.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		338	pg/g	11.6	82.9

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1470	1660	pg/g	88.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1540	1660	pg/g	93.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1270	1660	pg/g	76.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1290	1660	pg/g	77.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1550	1660	pg/g	93.7	(23%-140%)
13C-OCDD		2870	3310	pg/g	86.5	(17%-157%)
13C-2,3,7,8-TCDF		1530	1660	pg/g	92.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1490	1660	pg/g	89.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1700	1660	pg/g	103	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1310	1660	pg/g	79.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1420	1660	pg/g	85.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1400	1660	pg/g	84.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1410	1660	pg/g	85.3	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1450	1660	pg/g	87.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1520	1660	pg/g	91.7	(26%-138%)
37Cl-2,3,7,8-TCDD		187	166	pg/g	113	(35%-197%)

Comments:**E** Value is estimated - Concentration of the target analyte exceeds the instrument calibration range**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6302	Client: TETR001	Project: TETR00114
Lab Sample ID: 6302005	Date Collected: 07/02/2014 14:55	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 07/03/2014 10:50	%Moisture: 14.4
Client ID: SFRA-133		Prep Basis: Dry Weight
Batch ID: 26346	Method: EPA Method 1613B	
Run Date: 07/08/2014 21:40	Analyst: JTF	Instrument: HRP763
Data File: b07jul14a_3-13		Dilution: 1
Prep Batch: 26344	Prep Method: SW846 3540C	
Prep Date: 07-JUL-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	E	5670	pg/g	9.37	9.82
40321-76-4	1,2,3,7,8-PeCDD	U	5.93	pg/g	5.93	49.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	7.54	pg/g	7.54	49.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	40.2	pg/g	7.54	49.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	10.9	pg/g	7.97	49.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		612	pg/g	14.7	49.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11400	pg/g	39.5	98.2
51207-31-9	2,3,7,8-TCDF		36.4	pg/g	8.03	9.82
57117-41-6	1,2,3,7,8-PeCDF	U	4.58	pg/g	4.58	49.1
57117-31-4	2,3,4,7,8-PeCDF	J	6.48	pg/g	3.87	49.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	13.3	pg/g	5.18	49.1
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.76	pg/g	4.99	49.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	11.0	pg/g	5.24	49.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	7.09	pg/g	7.09	49.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		189	pg/g	5.36	49.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	9.51	pg/g	8.86	49.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		243	pg/g	21.6	98.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1830	1960	pg/g	93.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		2060	1960	pg/g	105	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1490	1960	pg/g	76.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1720	1960	pg/g	87.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1960	1960	pg/g	99.7	(23%-140%)
13C-OCDD		3780	3930	pg/g	96.1	(17%-157%)
13C-2,3,7,8-TCDF		1900	1960	pg/g	96.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1980	1960	pg/g	101	(24%-185%)
13C-2,3,4,7,8-PeCDF		2240	1960	pg/g	114	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1650	1960	pg/g	83.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1790	1960	pg/g	91.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1760	1960	pg/g	89.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1900	1960	pg/g	97.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1880	1960	pg/g	95.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1990	1960	pg/g	101	(26%-138%)
37Cl-2,3,7,8-TCDD		227	196	pg/g	116	(35%-197%)

Comments:**E** Value is estimated - Concentration of the target analyte exceeds the instrument calibration range**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

July 11, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6315

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 09, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

CFA Work Order Number: 60315

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd, Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc. Phone #: 314-517 6798

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action
 Address: 20 Jamestown Farm Drive
 Collected by: Kinroth Send Results To: dnekinroth@charter.net

Total number of containers	Sample Analysis Requested ⁽⁵⁾										Preservative Type (6)
	1	2	3	4	5	6	7	8	9	10	
FO											
1613B											
1	X										Comments Note: extra sample is required for sample specific QC *work order #1 - 48 hour turn on samples 134 & 135 2 hour turn on 136 & 137 for work order #2
1	X										
1	X										
1	X										

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾
SFRA-134*	7-8-14	1548			soil
-135*		1552			
-136		1530			
-137		1532			

END OF SHIPMENT
 OK
 7-8-14

TAT Requested: Normal: Rush: Specify: see comments (No Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Possible Dioxin/Furans compounds

Sample Collection Time Zone: Eastern Pacific Central Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>Dave Kinroth</u>	<u>7-8-14</u>	<u>16:15</u>	<u>Cynde Larkins</u>	<u>09 JUL 14</u>	<u>0950</u>

CFA PM:
 Method of Shipment: Fedex Date Shipped: 7-8-14
 Airbill #: 8042 3157 0837
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or- N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Body Seal Intact?
 YES NO
 Cooler Temp:
5.9 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

Page 2 of 20

*work order #1
*work order #2

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6315
Shipping Company: Fed Ex	Date/Time Received: 09JUL14 0950

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 5.9°C
4 Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6315**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26378
Clean Up Batch Number: 26377
Extraction Batch Number: 26376

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6315001	SFRA-134
6315002	SFRA-135
12010882	Method Blank (MB)
12010883	Laboratory Control Sample (LCS)
12010884	Laboratory Control Sample Duplicate (LCSD)
12010885	6315001(SFRA-134) Matrix Spike (MS)
12010886	6315001(SFRA-134) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6315001 (SFRA-134) - Batch 26378 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

Three MS recoveries for this SDG were not within the acceptance limits and can be attributed to matrix interference. 12010885 (SFRA-134) - Batch 26378.

Matrix Spike Duplicate (MSD) Recovery Statement

One MSD recovery for this SDG were not within the acceptance limits. The failure confirms in the MS and can be attributed to matrix interference. 12010886 (SFRA-134) - Batch 26378.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26378.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information**Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6315 CFA Work Order: 6315

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 11 JUL 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6315	Client: TETR001	Project: TETR00114
Lab Sample ID: 6315001	Date Collected: 07/08/2014 15:48	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 07/09/2014 09:50	%Moisture: 12.3
Client ID: SFRA-134		Prep Basis: Dry Weight
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 17:41	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-4		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 1 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		812	pg/g	8.01	11.4
40321-76-4	1,2,3,7,8-PeCDD	U	6.39	pg/g	6.39	57.0
39227-28-6	1,2,3,4,7,8-HxCDD	J	16.8	pg/g	12.5	57.0
57653-85-7	1,2,3,6,7,8-HxCDD	J	40.8	pg/g	9.83	57.0
19408-74-3	1,2,3,7,8,9-HxCDD	J	13.1	pg/g	11.5	57.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		1170	pg/g	24.6	57.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14100	pg/g	76.9	114
51207-31-9	2,3,7,8-TCDF	U	6.73	pg/g	6.73	11.4
57117-41-6	1,2,3,7,8-PeCDF	J	10.3	pg/g	5.00	57.0
57117-31-4	2,3,4,7,8-PeCDF	J	6.39	pg/g	4.24	57.0
70648-26-9	1,2,3,4,7,8-HxCDF	J	27.9	pg/g	7.94	57.0
57117-44-9	1,2,3,6,7,8-HxCDF	J	10.3	pg/g	7.30	57.0
60851-34-5	2,3,4,6,7,8-HxCDF	J	10.5	pg/g	8.08	57.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	11.7	pg/g	11.7	57.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		203	pg/g	9.79	57.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	18.8	pg/g	17.0	57.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		522	pg/g	34.9	114

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1960	2280	pg/g	86.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1990	2280	pg/g	87.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1490	2280	pg/g	65.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1960	2280	pg/g	85.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1960	2280	pg/g	86.1	(23%-140%)
13C-OCDD		3330	4560	pg/g	73.0	(17%-157%)
13C-2,3,7,8-TCDF		2310	2280	pg/g	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		2090	2280	pg/g	91.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		2300	2280	pg/g	101	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1760	2280	pg/g	77.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2350	2280	pg/g	103	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2020	2280	pg/g	88.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2070	2280	pg/g	90.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2090	2280	pg/g	91.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2100	2280	pg/g	91.9	(26%-138%)
37Cl-2,3,7,8-TCDD		206	228	pg/g	90.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6315	Client: TETR001	Project: TETR00114
Lab Sample ID: 6315002	Date Collected: 07/08/2014 15:52	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 07/09/2014 09:50	%Moisture: 15.6
Client ID: SFRA-135		Prep Basis: Dry Weight
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 20:04	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-7		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 1.16 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		332	pg/g	4.66	10.2
40321-76-4	1,2,3,7,8-PeCDD	U	3.33	pg/g	3.33	51.1
39227-28-6	1,2,3,4,7,8-HxCDD	J	29.7	pg/g	7.33	51.1
57653-85-7	1,2,3,6,7,8-HxCDD	J	39.8	pg/g	6.66	51.1
19408-74-3	1,2,3,7,8,9-HxCDD	J	11.0	pg/g	7.33	51.1
35822-46-9	1,2,3,4,6,7,8-HpCDD		998	pg/g	29.0	51.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12500	pg/g	70.2	102
51207-31-9	2,3,7,8-TCDF	U	4.86	pg/g	4.86	10.2
57117-41-6	1,2,3,7,8-PeCDF	J	12.0	pg/g	4.64	51.1
57117-31-4	2,3,4,7,8-PeCDF	J	6.21	pg/g	4.13	51.1
70648-26-9	1,2,3,4,7,8-HxCDF	J	28.6	pg/g	5.47	51.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	6.43	pg/g	6.43	51.1
60851-34-5	2,3,4,6,7,8-HxCDF	J	12.8	pg/g	5.23	51.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	8.45	pg/g	8.45	51.1
67562-39-4	1,2,3,4,6,7,8-HpCDF		201	pg/g	6.70	51.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	18.5	pg/g	11.0	51.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF		539	pg/g	24.1	102

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1630	2040	pg/g	80.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1730	2040	pg/g	84.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1390	2040	pg/g	68.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1730	2040	pg/g	84.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1730	2040	pg/g	84.6	(23%-140%)
13C-OCDD		2750	4080	pg/g	67.3	(17%-157%)
13C-2,3,7,8-TCDF		1950	2040	pg/g	95.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1800	2040	pg/g	88.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1890	2040	pg/g	92.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1670	2040	pg/g	81.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1980	2040	pg/g	97.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2040	pg/g	93.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1820	2040	pg/g	89.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1810	2040	pg/g	88.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1820	2040	pg/g	89.1	(26%-138%)
37Cl-2,3,7,8-TCDD		173	204	pg/g	84.6	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6315

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010883	LCS for batch 26376	13C-2,3,7,8-TCDD		81.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		81.2	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		70.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		78.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		80.6	(22%-166%)
		13C-OCDD		61.2	(13%-199%)
		13C-2,3,7,8-TCDF		99.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		87.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		96.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		78.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		98.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		88.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		85.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		85.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		84.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		87.5	(31%-191%)
12010884	LCSD for batch 26376	13C-2,3,7,8-TCDD		78.0	(20%-175%)
		13C-1,2,3,7,8-PeCDD		74.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		60.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		79.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		74.7	(22%-166%)
		13C-OCDD		56.9	(13%-199%)
		13C-2,3,7,8-TCDF		92.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		79.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		87.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		70.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		92.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		82.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		80.3	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		80.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		77.8	(20%-186%)
		37Cl-2,3,7,8-TCDD		77.3	(31%-191%)
12010882	MB for batch 26376	13C-2,3,7,8-TCDD		77.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		65.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		78.5	(23%-140%)
		13C-OCDD		63.1	(17%-157%)
		13C-2,3,7,8-TCDF		94.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		95.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		102	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		95.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		89.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		81.2	(35%-197%)
6315001	SFRA-134	13C-2,3,7,8-TCDD		86.0	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6315

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6315001	SFRA-134	13C-1,2,3,7,8-PeCDD		87.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		65.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.1	(23%-140%)
		13C-OCDD		73.0	(17%-157%)
		13C-2,3,7,8-TCDF		101	(24%-169%)
		13C-1,2,3,7,8-PeCDF		91.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		101	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		103	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		90.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		91.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		90.2	(35%-197%)
12010885	SFRA-134(6315001MS)	13C-2,3,7,8-TCDD		83.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		65.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		81.4	(23%-140%)
		13C-OCDD		68.5	(17%-157%)
		13C-2,3,7,8-TCDF		97.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		100	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		98.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		93.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		93.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.6	(26%-138%)
37Cl-2,3,7,8-TCDD		87.5	(35%-197%)		
12010886	SFRA-134(6315001MSD)	13C-2,3,7,8-TCDD		82.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		65.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		82.4	(23%-140%)
		13C-OCDD		64.1	(17%-157%)
		13C-2,3,7,8-TCDF		98.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		102	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		86.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		84.2	(26%-138%)
37Cl-2,3,7,8-TCDD		89.8	(35%-197%)		
6315002	SFRA-135	13C-2,3,7,8-TCDD		80.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		84.6	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6315

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6315002	SFRA-135	13C-1,2,3,4,7,8-HxCDD		68.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		84.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.6	(23%-140%)
		13C-OCDD		67.3	(17%-157%)
		13C-2,3,7,8-TCDF		95.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		88.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		97.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		93.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		89.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		84.6	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6315
Client ID: LCS for batch 26376
Lab Sample ID: 12010883
Instrument: HRP763
Analyst: JTF

Sample Type: Laboratory Control Sample
Matrix: SOLID
Analysis Date: 07/10/2014 15:19
Prep Batch ID: 26376
Batch ID: 26378
Dilution: 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.1	100	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	104	104	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	106	106	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	108	108	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	120	120	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	97.0	97	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	192	96	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	20.2	101	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	105	105	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	102	102	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	114	114	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	108	108	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	111	111	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	120	120	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	110	110	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	115	115	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	248	124	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6315

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26376

Matrix: SOLID

Lab Sample ID: 12010884

Instrument: HRP763

Analysis Date: 07/10/2014 16:06

Dilution: 1

Analyst: JTF

Prep Batch ID: 26376

Batch ID: 26378

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.9	105	67-158	4.07	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	106	106	70-142	1.90	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	104	104	70-164	1.56	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	109	109	76-134	0.556	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	120	120	64-162	0.225	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	95.0	95	70-140	2.05	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	191	95.3	78-144	0.709	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.9	99.4	75-158	1.35	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	104	104	80-134	0.954	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	107	107	68-160	5.20	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	112	112	72-134	1.12	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	112	112	84-130	3.90	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	111	111	70-156	0.281	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	120	120	78-130	0.102	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	106	106	82-122	4.02	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	109	109	78-138	5.13	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	247	124	63-170	0.234	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6315
Client ID: SFRA-134(6315001MS)
Lab Sample ID: 12010885
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 12.3
Analysis Date: 07/10/2014 18:29
Prep Batch ID: 26376
Batch ID: 26378
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	MS 2,3,7,8-TCDD	211		936	59 *	70-130
40321-76-4	MS 1,2,3,7,8-PeCDD	1060	U	1150	109	70-130
39227-28-6	MS 1,2,3,4,7,8-HxCDD	1060	J	1130	105	70-130
57653-85-7	MS 1,2,3,6,7,8-HxCDD	1060	J	1170	107	70-130
19408-74-3	MS 1,2,3,7,8,9-HxCDD	1060	J	1220	115	70-130
35822-46-9	MS 1,2,3,4,6,7,8-HpCDD	1060		2460	122	70-130
3268-87-9	MS 1,2,3,4,6,7,8,9-OCDD	2110		18700	220 *	70-130
51207-31-9	MS 2,3,7,8-TCDF	211	U	232	110	70-130
57117-41-6	MS 1,2,3,7,8-PeCDF	1060	J	1110	104	70-130
57117-31-4	MS 2,3,4,7,8-PeCDF	1060	J	1080	102	70-130
70648-26-9	MS 1,2,3,4,7,8-HxCDF	1060	J	1210	112	70-130
57117-44-9	MS 1,2,3,6,7,8-HxCDF	1060	J	1170	109	70-130
60851-34-5	MS 2,3,4,6,7,8-HxCDF	1060	J	1180	110	70-130
72918-21-9	MS 1,2,3,7,8,9-HxCDF	1060	U	1210	115	70-130
67562-39-4	MS 1,2,3,4,6,7,8-HpCDF	1060		1320	106	70-130
55673-89-7	MS 1,2,3,4,7,8,9-HpCDF	1060	J	1180	110	70-130
39001-02-0	MS 1,2,3,4,6,7,8,9-OCDF	2110		3360	134 *	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6315	Sample Type: Matrix Spike Duplicate
Client ID: SFRA-134(6315001MSD)	Matrix: SOLID
Lab Sample ID: 12010886	%Moisture: 12.3
Instrument: HRP763	Analysis Date: 07/10/2014 19:17
Analyst: JTF	Dilution: 1
	Prep Batch ID: 26376
	Batch ID: 26378

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	226		1010	89.3	70-130	7.91	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1130	U	1210	107	70-130	5.60	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1130	J	1200	105	70-130	6.13	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1130	J	1230	106	70-130	5.31	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1130	J	1450	127	70-130	16.9	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1130		2240	95.3	70-130	9.03	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2260		17300	143 *	70-130	7.95	0-20
51207-31-9	MSD 2,3,7,8-TCDF	226	U	247	109	70-130	6.29	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1130	J	1180	103	70-130	5.52	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1130	J	1150	101	70-130	5.91	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1130	J	1230	106	70-130	1.88	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1130	J	1290	113	70-130	9.90	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1130	J	1240	109	70-130	5.53	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1130	U	1340	119	70-130	9.79	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1130		1470	112	70-130	10.7	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1130	J	1210	106	70-130	2.76	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2260		3400	127	70-130	1.12	0-20

Method Blank Summary

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SDG Number: 6315
Client ID: MB for batch 26376
Lab Sample ID: 12010882
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 09-JUL-14

Matrix: SOLID
Data File: b09jul14a_4-3
Analyzed: 07/10/14 16:54

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26376	12010883	b09jul14a_4-1	07/10/14	1519
02 LCSD for batch 26376	12010884	b09jul14a_4-2	07/10/14	1606
03 SFRA-134	6315001	b09jul14a_4-4	07/10/14	1741
04 SFRA-134(6315001MS)	12010885	b09jul14a_4-5	07/10/14	1829
05 SFRA-134(6315001MSD)	12010886	b09jul14a_4-6	07/10/14	1917
06 SFRA-135	6315002	b09jul14a_4-7	07/10/14	2004

**Hi-Res Dioxins/Furans
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SDG Number: 6315	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010882		Matrix: SOLID
Client Sample: QC for batch 26376		
Client ID: MB for batch 26376		Prep Basis: As Received
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 16:54	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-3		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.638	pg/g	0.638	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.31	pg/g	0.310	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.472	pg/g	0.472	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.442	pg/g	0.442	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.48	pg/g	0.480	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.866	pg/g	0.866	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	1.25	pg/g	1.25	10.0
51207-31-9	2,3,7,8-TCDF	U	.482	pg/g	0.482	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.254	pg/g	0.254	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.21	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.286	pg/g	0.286	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.244	pg/g	0.244	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.296	pg/g	0.296	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.446	pg/g	0.446	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.354	pg/g	0.354	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.562	pg/g	0.562	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.99	pg/g	1.99	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		154	200	pg/g	77.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		158	200	pg/g	78.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		131	200	pg/g	65.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		171	200	pg/g	85.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		157	200	pg/g	78.5	(23%-140%)
13C-OCDD		252	400	pg/g	63.1	(17%-157%)
13C-2,3,7,8-TCDF		189	200	pg/g	94.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		170	200	pg/g	85.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		190	200	pg/g	95.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		161	200	pg/g	80.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		205	200	pg/g	102	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		192	200	pg/g	95.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		176	200	pg/g	87.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		180	200	pg/g	89.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		179	200	pg/g	89.4	(26%-138%)
37Cl-2,3,7,8-TCDD		16.2	20.0	pg/g	81.2	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6315	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010883		Matrix: SOLID
Client Sample: QC for batch 26376		
Client ID: LCS for batch 26376		Prep Basis: As Received
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 15:19	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-1		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.1	pg/g	0.606	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.576	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		106	pg/g	1.12	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		108	pg/g	1.07	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		120	pg/g	1.16	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		97.0	pg/g	1.74	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	3.88	10.0
51207-31-9	2,3,7,8-TCDF		20.2	pg/g	0.368	1.00
57117-41-6	1,2,3,7,8-PeCDF		105	pg/g	0.758	5.00
57117-31-4	2,3,4,7,8-PeCDF		102	pg/g	0.686	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		114	pg/g	1.18	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		108	pg/g	0.998	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		111	pg/g	1.16	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		120	pg/g	1.85	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		110	pg/g	1.30	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		115	pg/g	2.22	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		248	pg/g	3.16	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		163	200	pg/g	81.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		162	200	pg/g	81.2	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		140	200	pg/g	70.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		157	200	pg/g	78.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		161	200	pg/g	80.6	(22%-166%)
13C-OCDD		245	400	pg/g	61.2	(13%-199%)
13C-2,3,7,8-TCDF		199	200	pg/g	99.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		176	200	pg/g	87.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		194	200	pg/g	96.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		157	200	pg/g	78.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		197	200	pg/g	98.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		177	200	pg/g	88.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		171	200	pg/g	85.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		172	200	pg/g	85.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		168	200	pg/g	84.1	(20%-186%)
37Cl-2,3,7,8-TCDD		17.5	20.0	pg/g	87.5	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
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SDG Number: 6315	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010884		Matrix: SOLID
Client Sample: QC for batch 26376		
Client ID: LCSD for batch 26376		Prep Basis: As Received
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 16:06	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-2		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.612	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.534	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		104	pg/g	1.46	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		109	pg/g	1.41	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		120	pg/g	1.51	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.0	pg/g	1.98	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		191	pg/g	5.70	10.0
51207-31-9	2,3,7,8-TCDF		19.9	pg/g	0.472	1.00
57117-41-6	1,2,3,7,8-PeCDF		104	pg/g	0.972	5.00
57117-31-4	2,3,4,7,8-PeCDF		107	pg/g	0.804	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		112	pg/g	2.28	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		112	pg/g	2.16	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		111	pg/g	2.34	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		120	pg/g	3.94	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		106	pg/g	1.34	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		109	pg/g	2.26	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		247	pg/g	5.92	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		156	200	pg/g	78.0	(20%-175%)
13C-1,2,3,7,8-PeCDD		149	200	pg/g	74.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		120	200	pg/g	60.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		158	200	pg/g	79.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		149	200	pg/g	74.7	(22%-166%)
13C-OCDD		228	400	pg/g	56.9	(13%-199%)
13C-2,3,7,8-TCDF		185	200	pg/g	92.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		159	200	pg/g	79.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		174	200	pg/g	87.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		142	200	pg/g	70.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		184	200	pg/g	92.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		165	200	pg/g	82.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.3	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		161	200	pg/g	80.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		156	200	pg/g	77.8	(20%-186%)
37Cl-2,3,7,8-TCDD		15.5	20.0	pg/g	77.3	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
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SDG Number: 6315	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010885	Date Collected: 07/08/2014 15:48	Matrix: SOLID
Client Sample: QC for batch 26376	Date Received: 07/09/2014 09:50	%Moisture: 12.3
Client ID: SFRA-134(6315001MS)		Prep Basis: Dry Weight
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 18:29	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-5		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		936	pg/g	7.94	10.6
40321-76-4	1,2,3,7,8-PeCDD		1150	pg/g	8.20	52.8
39227-28-6	1,2,3,4,7,8-HxCDD		1130	pg/g	14.7	52.8
57653-85-7	1,2,3,6,7,8-HxCDD		1170	pg/g	14.2	52.8
19408-74-3	1,2,3,7,8,9-HxCDD		1220	pg/g	15.2	52.8
35822-46-9	1,2,3,4,6,7,8-HpCDD		2460	pg/g	26.0	52.8
3268-87-9	1,2,3,4,6,7,8,9-OCDD		18700	pg/g	81.8	106
51207-31-9	2,3,7,8-TCDF		232	pg/g	6.44	10.6
57117-41-6	1,2,3,7,8-PeCDF		1110	pg/g	11.3	52.8
57117-31-4	2,3,4,7,8-PeCDF		1080	pg/g	9.86	52.8
70648-26-9	1,2,3,4,7,8-HxCDF		1210	pg/g	17.6	52.8
57117-44-9	1,2,3,6,7,8-HxCDF		1170	pg/g	15.4	52.8
60851-34-5	2,3,4,6,7,8-HxCDF		1180	pg/g	17.4	52.8
72918-21-9	1,2,3,7,8,9-HxCDF		1210	pg/g	24.9	52.8
67562-39-4	1,2,3,4,6,7,8-HpCDF		1320	pg/g	15.0	52.8
55673-89-7	1,2,3,4,7,8,9-HpCDF		1180	pg/g	25.3	52.8
39001-02-0	1,2,3,4,6,7,8,9-OCDF		3360	pg/g	44.4	106

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1760	2110	pg/g	83.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1820	2110	pg/g	86.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1380	2110	pg/g	65.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1890	2110	pg/g	89.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1720	2110	pg/g	81.4	(23%-140%)
13C-OCDD		2890	4220	pg/g	68.5	(17%-157%)
13C-2,3,7,8-TCDF		2060	2110	pg/g	97.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1900	2110	pg/g	89.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		2110	2110	pg/g	100	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1610	2110	pg/g	76.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2080	2110	pg/g	98.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1970	2110	pg/g	93.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1960	2110	pg/g	93.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1910	2110	pg/g	90.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1890	2110	pg/g	89.6	(26%-138%)
37Cl-2,3,7,8-TCDD		185	211	pg/g	87.5	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6315	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010886	Date Collected: 07/08/2014 15:48	Matrix: SOLID
Client Sample: QC for batch 26376	Date Received: 07/09/2014 09:50	%Moisture: 12.3
Client ID: SFRA-134(6315001MSD)		Prep Basis: Dry Weight
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 19:17	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-6		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1010	pg/g	7.34	11.3
40321-76-4	1,2,3,7,8-PeCDD		1210	pg/g	7.14	56.5
39227-28-6	1,2,3,4,7,8-HxCDD		1200	pg/g	18.9	56.5
57653-85-7	1,2,3,6,7,8-HxCDD		1230	pg/g	18.9	56.5
19408-74-3	1,2,3,7,8,9-HxCDD		1450	pg/g	19.9	56.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		2240	pg/g	31.6	56.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		17300	pg/g	80.4	113
51207-31-9	2,3,7,8-TCDF		247	pg/g	6.19	11.3
57117-41-6	1,2,3,7,8-PeCDF		1180	pg/g	9.08	56.5
57117-31-4	2,3,4,7,8-PeCDF		1150	pg/g	8.15	56.5
70648-26-9	1,2,3,4,7,8-HxCDF		1230	pg/g	13.5	56.5
57117-44-9	1,2,3,6,7,8-HxCDF		1290	pg/g	11.8	56.5
60851-34-5	2,3,4,6,7,8-HxCDF		1240	pg/g	14.3	56.5
72918-21-9	1,2,3,7,8,9-HxCDF		1340	pg/g	20.1	56.5
67562-39-4	1,2,3,4,6,7,8-HpCDF		1470	pg/g	12.7	56.5
55673-89-7	1,2,3,4,7,8,9-HpCDF		1210	pg/g	20.9	56.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF		3400	pg/g	32.8	113

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1860	2260	pg/g	82.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2020	2260	pg/g	89.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1470	2260	pg/g	65.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1780	2260	pg/g	79.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1860	2260	pg/g	82.4	(23%-140%)
13C-OCDD		2900	4520	pg/g	64.1	(17%-157%)
13C-2,3,7,8-TCDF		2220	2260	pg/g	98.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		2140	2260	pg/g	94.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		2310	2260	pg/g	102	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1770	2260	pg/g	78.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2080	2260	pg/g	92.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1980	2260	pg/g	87.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1960	2260	pg/g	86.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1910	2260	pg/g	84.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1900	2260	pg/g	84.2	(26%-138%)
37Cl-2,3,7,8-TCDD		203	226	pg/g	89.8	(35%-197%)

Comments:

July 11, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6316

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 09, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #: _____
 CFA Quote #: _____
 COC Number ⁽¹⁾: _____
 PO Number: _____

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

CFA Work Order Number: 6316 (Work order #2)

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc. Phone #: 314-517 6790

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action
 Address: 20 Jamestown Farm Drive
 Collected by: Kinroth Send Results To: davekinroth@ctd.com

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code ⁽²⁾	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers	Preservative Type ⁽⁶⁾	Comments
<u>SFRA-134*</u>	<u>7-8-14</u>	<u>1548</u>			<u>soil</u>	<u>1</u>	<u>40</u>	Note: extra sample is required for sample specific QC. <u>*work order #1 - 48 hour turn on on samples 134 & 135</u> <u>12 hour turn on 136 & 137 for work order #2</u>
<u>-135*</u>		<u>1552</u>			<u>1</u>	<u>1613B</u>		
<u>-136</u>		<u>1530</u>			<u>1</u>			
<u>-137</u>		<u>1532</u>			<u>1</u>			
END OF SHIPMENT								
<u>APR 7-8-14</u>								

TAT Requested: Normal: _____ Rush: X Specify: see comments Additional Surcharge Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Possible Dioxin/Furans compounds

Sample Collection Time Zone
 Eastern Central Pacific Other _____
 Mountain

Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>Dave Kinroth</u>	<u>7-8-14</u>	<u>16:15</u>	<u>Cynde Perkins</u>	<u>09 JUL 14</u>	<u>0950</u>

CFA PM:
 Method of Shipment: Fedex Date Shipped: 7-8-14
 Airbill #: 8042 3157 0837

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a-Y - for yes the sample was field filtered or -N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES YES NO _____

Cooler Temp:
5.9°C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6316
Shipping Company: Fed Ex	Date/Time Received: 09JUL14 0950

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			✓
Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	✓			
3 Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other (describe) 5.9°C
4 Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	✓			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	✓			

Comments:

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6316**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26378
Clean Up Batch Number: 26377
Extraction Batch Number: 26376

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6316001	SFRA-136
6316002	SFRA-137
12010882	Method Blank (MB)
12010883	Laboratory Control Sample (LCS)
12010884	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 26378.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26378.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6316 CFA Work Order: 6316


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 11 JUL 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6316	Client: TETR001	Project: TETR00114
Lab Sample ID: 6316001	Date Collected: 07/08/2014 15:30	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 07/09/2014 09:50	%Moisture: 16.7
Client ID: SFRA-136		Prep Basis: Dry Weight
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 20:52	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-8		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 1.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		294	pg/g	4.55	10.4
40321-76-4	1,2,3,7,8-PeCDD	J	4.26	pg/g	3.43	52.2
39227-28-6	1,2,3,4,7,8-HxCDD	J	11.7	pg/g	7.23	52.2
57653-85-7	1,2,3,6,7,8-HxCDD	J	26.2	pg/g	6.50	52.2
19408-74-3	1,2,3,7,8,9-HxCDD	J	13.2	pg/g	7.19	52.2
35822-46-9	1,2,3,4,6,7,8-HpCDD		697	pg/g	29.9	52.2
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9870	pg/g	61.2	104
51207-31-9	2,3,7,8-TCDF	U	4.53	pg/g	4.53	10.4
57117-41-6	1,2,3,7,8-PeCDF	J	10.9	pg/g	3.78	52.2
57117-31-4	2,3,4,7,8-PeCDF	J	4.12	pg/g	3.20	52.2
70648-26-9	1,2,3,4,7,8-HxCDF	J	21.2	pg/g	4.03	52.2
57117-44-9	1,2,3,6,7,8-HxCDF	J	6.79	pg/g	3.66	52.2
60851-34-5	2,3,4,6,7,8-HxCDF	J	7.62	pg/g	4.14	52.2
72918-21-9	1,2,3,7,8,9-HxCDF	U	6.43	pg/g	6.43	52.2
67562-39-4	1,2,3,4,6,7,8-HpCDF		164	pg/g	6.58	52.2
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	16.5	pg/g	10.0	52.2
39001-02-0	1,2,3,4,6,7,8,9-OCDF		495	pg/g	17.8	104

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1790	2090	pg/g	85.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1800	2090	pg/g	86.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1390	2090	pg/g	66.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1780	2090	pg/g	85.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1870	2090	pg/g	89.4	(23%-140%)
13C-OCDD		3040	4180	pg/g	72.7	(17%-157%)
13C-2,3,7,8-TCDF		2200	2090	pg/g	105	(24%-169%)
13C-1,2,3,7,8-PeCDF		1910	2090	pg/g	91.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		2020	2090	pg/g	96.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1660	2090	pg/g	79.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2110	2090	pg/g	101	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1980	2090	pg/g	94.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1900	2090	pg/g	90.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1880	2090	pg/g	90.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1980	2090	pg/g	94.9	(26%-138%)
37Cl-2,3,7,8-TCDD		203	209	pg/g	97.0	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6316	Client: TETR001	Project: TETR00114
Lab Sample ID: 6316002	Date Collected: 07/08/2014 15:32	Matrix: SOLID
Client Sample: 1613 Soil	Date Received: 07/09/2014 09:50	%Moisture: 15.8
Client ID: SFRA-137		Prep Basis: Dry Weight
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 21:40	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-9		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		238	pg/g	4.97	9.98
40321-76-4	1,2,3,7,8-PeCDD	U	4.27	pg/g	4.27	49.9
39227-28-6	1,2,3,4,7,8-HxCDD	J	22.7	pg/g	6.98	49.9
57653-85-7	1,2,3,6,7,8-HxCDD	J	37.7	pg/g	6.31	49.9
19408-74-3	1,2,3,7,8,9-HxCDD	J	13.9	pg/g	6.94	49.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		1110	pg/g	22.7	49.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14300	pg/g	62.5	99.8
51207-31-9	2,3,7,8-TCDF	U	5.49	pg/g	5.49	9.98
57117-41-6	1,2,3,7,8-PeCDF	J	11.2	pg/g	4.27	49.9
57117-31-4	2,3,4,7,8-PeCDF	J	6.35	pg/g	3.57	49.9
70648-26-9	1,2,3,4,7,8-HxCDF	J	27.7	pg/g	6.80	49.9
57117-44-9	1,2,3,6,7,8-HxCDF	J	8.20	pg/g	6.25	49.9
60851-34-5	2,3,4,6,7,8-HxCDF	J	11.2	pg/g	6.68	49.9
72918-21-9	1,2,3,7,8,9-HxCDF	U	10.1	pg/g	10.1	49.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		224	pg/g	8.08	49.9
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	17.7	pg/g	12.5	49.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		839	pg/g	24.7	99.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1450	2000	pg/g	72.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		1430	2000	pg/g	71.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1150	2000	pg/g	57.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1460	2000	pg/g	73.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1530	2000	pg/g	76.5	(23%-140%)
13C-OCDD		2450	3990	pg/g	61.3	(17%-157%)
13C-2,3,7,8-TCDF		1730	2000	pg/g	86.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1510	2000	pg/g	75.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1620	2000	pg/g	81.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1400	2000	pg/g	70.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1730	2000	pg/g	86.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1660	2000	pg/g	83.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1640	2000	pg/g	82.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1590	2000	pg/g	79.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1570	2000	pg/g	78.6	(26%-138%)
37Cl-2,3,7,8-TCDD		156	200	pg/g	78.2	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6316

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010883	LCS for batch 26376	13C-2,3,7,8-TCDD		81.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		81.2	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		70.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		78.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		80.6	(22%-166%)
		13C-OCDD		61.2	(13%-199%)
		13C-2,3,7,8-TCDF		99.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		87.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		96.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		78.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		98.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		88.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		85.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		85.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		84.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		87.5	(31%-191%)
12010884	LCSD for batch 26376	13C-2,3,7,8-TCDD		78.0	(20%-175%)
		13C-1,2,3,7,8-PeCDD		74.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		60.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		79.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		74.7	(22%-166%)
		13C-OCDD		56.9	(13%-199%)
		13C-2,3,7,8-TCDF		92.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		79.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		87.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		70.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		92.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		82.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		80.3	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		80.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		77.8	(20%-186%)
		37Cl-2,3,7,8-TCDD		77.3	(31%-191%)
12010882	MB for batch 26376	13C-2,3,7,8-TCDD		77.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		65.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		78.5	(23%-140%)
		13C-OCDD		63.1	(17%-157%)
		13C-2,3,7,8-TCDF		94.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		95.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		102	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		95.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		89.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		81.2	(35%-197%)
6316001	SFRA-136	13C-2,3,7,8-TCDD		85.5	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6316

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6316001	SFRA-136	13C-1,2,3,7,8-PeCDD		86.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		66.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.4	(23%-140%)
		13C-OCDD		72.7	(17%-157%)
		13C-2,3,7,8-TCDF		105	(24%-169%)
		13C-1,2,3,7,8-PeCDF		91.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		96.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		101	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		94.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		90.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		94.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		97.0	(35%-197%)
6316002	SFRA-137	13C-2,3,7,8-TCDD		72.8	(25%-164%)
		13C-1,2,3,7,8-PeCDD		71.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		57.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.5	(23%-140%)
		13C-OCDD		61.3	(17%-157%)
		13C-2,3,7,8-TCDF		86.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		75.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		81.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		86.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.6	(26%-138%)
37Cl-2,3,7,8-TCDD		78.2	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6316

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26376

Matrix: SOLID

Lab Sample ID: 12010883

Instrument: HRP763

Analysis Date: 07/10/2014 15:19

Dilution: 1

Analyst: JTF

Prep Batch ID: 26376

Batch ID: 26378

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.1	100	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	104	104	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	106	106	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	108	108	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	120	120	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	97.0	97	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	192	96	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	20.2	101	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	105	105	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	102	102	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	114	114	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	108	108	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	111	111	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	120	120	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	110	110	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	115	115	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	248	124	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6316

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26376

Matrix: SOLID

Lab Sample ID: 12010884

Instrument: HRP763

Analysis Date: 07/10/2014 16:06

Dilution: 1

Analyst: JTF

Prep Batch ID: 26376

Batch ID: 26378

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.9	105	67-158	4.07	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	106	106	70-142	1.90	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	104	104	70-164	1.56	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	109	109	76-134	0.556	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	120	120	64-162	0.225	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	95.0	95	70-140	2.05	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	191	95.3	78-144	0.709	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	19.9	99.4	75-158	1.35	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	104	104	80-134	0.954	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	107	107	68-160	5.20	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	112	112	72-134	1.12	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	112	112	84-130	3.90	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	111	111	70-156	0.281	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	120	120	78-130	0.102	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	106	106	82-122	4.02	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	109	109	78-138	5.13	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	247	124	63-170	0.234	0-20

Method Blank Summary

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SDG Number: 6316
Client ID: MB for batch 26376
Lab Sample ID: 12010882
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 09-JUL-14

Matrix: SOLID
Data File: b09jul14a_4-3
Analyzed: 07/10/14 16:54

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26376	12010883	b09jul14a_4-1	07/10/14	1519
02 LCSD for batch 26376	12010884	b09jul14a_4-2	07/10/14	1606
03 SFRA-136	6316001	b09jul14a_4-8	07/10/14	2052
04 SFRA-137	6316002	b09jul14a_4-9	07/10/14	2140

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6316	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010882		Matrix: SOLID
Client Sample: QC for batch 26376		
Client ID: MB for batch 26376		Prep Basis: As Received
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 16:54	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-3		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.638	pg/g	0.638	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.31	pg/g	0.310	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.472	pg/g	0.472	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.442	pg/g	0.442	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.48	pg/g	0.480	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.866	pg/g	0.866	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	1.25	pg/g	1.25	10.0
51207-31-9	2,3,7,8-TCDF	U	.482	pg/g	0.482	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.254	pg/g	0.254	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.21	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.286	pg/g	0.286	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.244	pg/g	0.244	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.296	pg/g	0.296	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.446	pg/g	0.446	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.354	pg/g	0.354	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.562	pg/g	0.562	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.99	pg/g	1.99	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		154	200	pg/g	77.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		158	200	pg/g	78.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		131	200	pg/g	65.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		171	200	pg/g	85.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		157	200	pg/g	78.5	(23%-140%)
13C-OCDD		252	400	pg/g	63.1	(17%-157%)
13C-2,3,7,8-TCDF		189	200	pg/g	94.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		170	200	pg/g	85.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		190	200	pg/g	95.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		161	200	pg/g	80.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		205	200	pg/g	102	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		192	200	pg/g	95.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		176	200	pg/g	87.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		180	200	pg/g	89.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		179	200	pg/g	89.4	(26%-138%)
37Cl-2,3,7,8-TCDD		16.2	20.0	pg/g	81.2	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6316	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010883		Matrix: SOLID
Client Sample: QC for batch 26376		
Client ID: LCS for batch 26376		Prep Basis: As Received
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 15:19	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-1		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.1	pg/g	0.606	1.00
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.576	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		106	pg/g	1.12	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		108	pg/g	1.07	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		120	pg/g	1.16	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		97.0	pg/g	1.74	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	3.88	10.0
51207-31-9	2,3,7,8-TCDF		20.2	pg/g	0.368	1.00
57117-41-6	1,2,3,7,8-PeCDF		105	pg/g	0.758	5.00
57117-31-4	2,3,4,7,8-PeCDF		102	pg/g	0.686	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		114	pg/g	1.18	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		108	pg/g	0.998	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		111	pg/g	1.16	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		120	pg/g	1.85	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		110	pg/g	1.30	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		115	pg/g	2.22	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		248	pg/g	3.16	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		163	200	pg/g	81.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		162	200	pg/g	81.2	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		140	200	pg/g	70.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		157	200	pg/g	78.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		161	200	pg/g	80.6	(22%-166%)
13C-OCDD		245	400	pg/g	61.2	(13%-199%)
13C-2,3,7,8-TCDF		199	200	pg/g	99.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		176	200	pg/g	87.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		194	200	pg/g	96.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		157	200	pg/g	78.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		197	200	pg/g	98.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		177	200	pg/g	88.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		171	200	pg/g	85.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		172	200	pg/g	85.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		168	200	pg/g	84.1	(20%-186%)
37Cl-2,3,7,8-TCDD		17.5	20.0	pg/g	87.5	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6316	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010884		Matrix: SOLID
Client Sample: QC for batch 26376		
Client ID: LCSDD for batch 26376		Prep Basis: As Received
Batch ID: 26378	Method: EPA Method 1613B	
Run Date: 07/10/2014 16:06	Analyst: JTF	Instrument: HRP763
Data File: b09jul14a_4-2		Dilution: 1
Prep Batch: 26376	Prep Method: SW846 3540C	
Prep Date: 09-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.612	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.534	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		104	pg/g	1.46	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		109	pg/g	1.41	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		120	pg/g	1.51	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.0	pg/g	1.98	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		191	pg/g	5.70	10.0
51207-31-9	2,3,7,8-TCDF		19.9	pg/g	0.472	1.00
57117-41-6	1,2,3,7,8-PeCDF		104	pg/g	0.972	5.00
57117-31-4	2,3,4,7,8-PeCDF		107	pg/g	0.804	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		112	pg/g	2.28	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		112	pg/g	2.16	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		111	pg/g	2.34	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		120	pg/g	3.94	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		106	pg/g	1.34	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		109	pg/g	2.26	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		247	pg/g	5.92	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		156	200	pg/g	78.0	(20%-175%)
13C-1,2,3,7,8-PeCDD		149	200	pg/g	74.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		120	200	pg/g	60.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		158	200	pg/g	79.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		149	200	pg/g	74.7	(22%-166%)
13C-OCDD		228	400	pg/g	56.9	(13%-199%)
13C-2,3,7,8-TCDF		185	200	pg/g	92.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		159	200	pg/g	79.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		174	200	pg/g	87.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		142	200	pg/g	70.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		184	200	pg/g	92.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		165	200	pg/g	82.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.3	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		161	200	pg/g	80.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		156	200	pg/g	77.8	(20%-186%)
37Cl-2,3,7,8-TCDD		15.5	20.0	pg/g	77.3	(31%-191%)

Comments:

July 16, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6328

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 11, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #:
 CFA Quote #:
 COC Number ⁽¹⁾:
 PO Number:

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request
 CFA Work Order Number: 0328

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Inc. Phone #: 3145776790

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Strecker Forest Removal Action
 Address: 20 Jamestown Farm Drive
 Collected by: Kinroth Send Results To: dave.kinroth@charter.net

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered ⁽³⁾	Sample Matrix ⁽⁴⁾	Total number of containers	Sample Analysis Requested ⁽⁵⁾										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC	
							1	2	3	4	5	6	7	8	9	10			11
SFRA-138	7-10-14	1423			soil	1													
-139		1426				1													
-140		1429				1													
-141		1433				1													
-142		1436				1													
-143		1438				1													
END OF SHIPMENT ADK 7-10-14																			

TAT Requested: Normal: Rush: X Specify: 72 hours (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
Dioxin/Furans Possible

Sample Collection Time Zone: Eastern Pacific / Central / Other _____
 Mountain

Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time
<u>Dave Kinroth</u>	<u>7-10-14</u>	<u>15:15</u>
<u>Cyrde Parkins</u>	<u>11 JUL 14</u>	<u>0950</u>

Sample Shipping and Delivery Details

CFA PM:
 Method of Shipment: Fedex Date Shipped: 7-10-14
 Airbill #: 8060 2691 5957
 Airbill #:

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES NO
 Cooler Temp:
5.8 C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

Page 2 of 3

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: TETR	Work Order: 6328
Shipping Company: Fed Ex	Date/Time Received: 11 JUL 14 0950

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: _____

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) 5.8°C
4	Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: CF

Date: 11 JUL 14

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6328**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26395
Clean Up Batch Number: 26394
Extraction Batch Number: 26393

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6328001	SFRA-138
6328002	SFRA-139
6328003	SFRA-140
6328004	SFRA-141
6328005	SFRA-142
6328006	SFRA-143
12010900	Method Blank (MB)
12010901	Laboratory Control Sample (LCS)
12010902	Laboratory Control Sample Duplicate (LCSD)
12010903	6328001(SFRA-138) Matrix Spike (MS)
12010904	6328001(SFRA-138) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information**Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6328001 (SFRA-138) - Batch 26395 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery Statement

Two MS recoveries for this SDG were not within the acceptance limits. The failures confirm in the matrix spike duplicate and can be attributed to matrix interference. 12010903 (SFRA-138) and 12010904 (SFRA-138) - Batch 26395.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information**Holding Time Specifications**

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26395.

Sample Dilutions

Samples 6328002 (SFRA-139), 6328003 (SFRA-140), 6328004 (SFRA-141), 6328005 (SFRA-142) and 6328006 (SFRA-143)- Batch 26395 were diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6328 CFA Work Order: 6328


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 16 JUL 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328001	Date Collected: 07/10/2014 14:23	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 10
Client ID: SFRA-138		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/14/2014 21:43	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a-11		Dilution: 1
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.09 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		731	pg/g	5.10	10.2
40321-76-4	1,2,3,7,8-PeCDD	U	3.43	pg/g	3.43	51.0
39227-28-6	1,2,3,4,7,8-HxCDD	J	7.46	pg/g	6.10	51.0
57653-85-7	1,2,3,6,7,8-HxCDD	J	10.0	pg/g	6.44	51.0
19408-74-3	1,2,3,7,8,9-HxCDD	U	11.6	pg/g	11.6	51.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		429	pg/g	11.1	51.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		21600	pg/g	3850	102
51207-31-9	2,3,7,8-TCDF	J	6.08	pg/g	3.89	10.2
57117-41-6	1,2,3,7,8-PeCDF	J	1.33	pg/g	0.512	51.0
57117-31-4	2,3,4,7,8-PeCDF	J	1.45	pg/g	0.477	51.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.06	pg/g	2.06	51.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.99	pg/g	1.99	51.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.1	pg/g	2.10	51.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.16	pg/g	3.16	51.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	7.26	pg/g	3.22	51.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	5.16	pg/g	5.16	51.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	21.9	pg/g	21.9	102

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1760	2040	pg/g	86.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		2190	2040	pg/g	108	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1790	2040	pg/g	87.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1860	2040	pg/g	91.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2260	2040	pg/g	111	(23%-140%)
13C-OCDD		1660	4080	pg/g	40.7	(17%-157%)
13C-2,3,7,8-TCDF		2100	2040	pg/g	103	(24%-169%)
13C-1,2,3,7,8-PeCDF		2060	2040	pg/g	101	(24%-185%)
13C-2,3,4,7,8-PeCDF		2190	2040	pg/g	107	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2070	2040	pg/g	101	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2050	2040	pg/g	101	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2070	2040	pg/g	102	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2020	2040	pg/g	99.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2140	2040	pg/g	105	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2170	2040	pg/g	106	(26%-138%)
37Cl-2,3,7,8-TCDD		214	204	pg/g	105	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328002	Date Collected: 07/10/2014 14:26	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 9.3
Client ID: SFRA-139		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/16/2014 09:09	Analyst: JTF	Instrument: HRP750
Data File: A16JUL14A-4		Dilution: 5
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.65 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		51.3	pg/g	9.30	33.4

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328002	Date Collected: 07/10/2014 14:26	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 9.3
Client ID: SFRA-139		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/15/2014 13:11	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a_3-2		Dilution: 5
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.65 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		8340	pg/g	16.3	33.4
40321-76-4	1,2,3,7,8-PeCDD	J	12.2	pg/g	7.65	167
39227-28-6	1,2,3,4,7,8-HxCDD	U	17.4	pg/g	17.4	167
57653-85-7	1,2,3,6,7,8-HxCDD	J	60.1	pg/g	17.1	167
19408-74-3	1,2,3,7,8,9-HxCDD	J	34.2	pg/g	18.2	167
35822-46-9	1,2,3,4,6,7,8-HpCDD		1070	pg/g	20.0	167
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14100	pg/g	66.3	334
51207-31-9	2,3,7,8-TCDF		63.2	pg/g	18.7	33.4
57117-41-6	1,2,3,7,8-PeCDF	U	7.92	pg/g	7.92	167
57117-31-4	2,3,4,7,8-PeCDF	J	9.77	pg/g	7.83	167
70648-26-9	1,2,3,4,7,8-HxCDF	J	16.7	pg/g	8.84	167
57117-44-9	1,2,3,6,7,8-HxCDF	J	41.2	pg/g	8.48	167
60851-34-5	2,3,4,6,7,8-HxCDF	J	17.8	pg/g	9.41	167
72918-21-9	1,2,3,7,8,9-HxCDF	U	13.9	pg/g	13.9	167
67562-39-4	1,2,3,4,6,7,8-HpCDF		231	pg/g	22.4	167
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	37	pg/g	37.0	167
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	323	pg/g	26.2	334

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1150	1340	pg/g	86.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1210	1340	pg/g	90.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1090	1340	pg/g	81.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1120	1340	pg/g	84.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1280	1340	pg/g	96.2	(23%-140%)
13C-OCDD		2010	2670	pg/g	75.1	(17%-157%)
13C-2,3,7,8-TCDF		1260	1340	pg/g	94.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1200	1340	pg/g	89.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1300	1340	pg/g	97.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1190	1340	pg/g	89.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1170	1340	pg/g	87.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1220	1340	pg/g	91.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1110	1340	pg/g	82.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1160	1340	pg/g	86.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1180	1340	pg/g	88.3	(26%-138%)
37Cl-2,3,7,8-TCDD		153	134	pg/g	115	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328003	Date Collected: 07/10/2014 14:29	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 8.7
Client ID: SFRA-140		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/16/2014 09:28	Analyst: JTF	Instrument: HRP750
Data File: A16JUL14A-5		Dilution: 5
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.35 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		42.8	pg/g	9.65	40.6

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328003	Date Collected: 07/10/2014 14:29	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 8.7
Client ID: SFRA-140		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/15/2014 13:59	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a_3-3		Dilution: 5
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.35 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		8200	pg/g	19.1	40.6
40321-76-4	1,2,3,7,8-PeCDD	U	11.1	pg/g	11.1	203
39227-28-6	1,2,3,4,7,8-HxCDD	U	16.5	pg/g	16.5	203
57653-85-7	1,2,3,6,7,8-HxCDD	J	90.7	pg/g	16.2	203
19408-74-3	1,2,3,7,8,9-HxCDD	J	46.5	pg/g	17.4	203
35822-46-9	1,2,3,4,6,7,8-HpCDD		897	pg/g	19.5	203
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11700	pg/g	68.6	406
51207-31-9	2,3,7,8-TCDF		41.3	pg/g	12.0	40.6
57117-41-6	1,2,3,7,8-PeCDF	U	8.34	pg/g	8.34	203
57117-31-4	2,3,4,7,8-PeCDF	J	10.8	pg/g	7.35	203
70648-26-9	1,2,3,4,7,8-HxCDF	J	19.7	pg/g	10.9	203
57117-44-9	1,2,3,6,7,8-HxCDF	J	65.1	pg/g	9.17	203
60851-34-5	2,3,4,6,7,8-HxCDF	J	15.7	pg/g	10.4	203
72918-21-9	1,2,3,7,8,9-HxCDF	U	15.9	pg/g	15.9	203
67562-39-4	1,2,3,4,6,7,8-HpCDF		324	pg/g	10.5	203
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	19.8	pg/g	19.8	203
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	350	pg/g	27.9	406

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1190	1620	pg/g	73.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1200	1620	pg/g	73.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1350	1620	pg/g	83.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1320	1620	pg/g	81.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1600	1620	pg/g	98.9	(23%-140%)
13C-OCDD		2350	3240	pg/g	72.3	(17%-157%)
13C-2,3,7,8-TCDF		1500	1620	pg/g	92.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1240	1620	pg/g	76.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1320	1620	pg/g	81.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1370	1620	pg/g	84.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1510	1620	pg/g	92.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1470	1620	pg/g	90.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1310	1620	pg/g	80.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1430	1620	pg/g	88.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1400	1620	pg/g	86.3	(26%-138%)
37Cl-2,3,7,8-TCDD		170	162	pg/g	105	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328004	Date Collected: 07/10/2014 14:33	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 6.2
Client ID: SFRA-141		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/15/2014 14:47	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a_3-4		Dilution: 5
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.28 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3450	pg/g	16.3	41.6
40321-76-4	1,2,3,7,8-PeCDD	U	7.68	pg/g	7.68	208
39227-28-6	1,2,3,4,7,8-HxCDD	U	10.7	pg/g	10.7	208
57653-85-7	1,2,3,6,7,8-HxCDD	J	35.4	pg/g	10.3	208
19408-74-3	1,2,3,7,8,9-HxCDD	J	14.0	pg/g	11.1	208
35822-46-9	1,2,3,4,6,7,8-HpCDD		526	pg/g	18.5	208
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8530	pg/g	47.6	416
51207-31-9	2,3,7,8-TCDF	J	22.9	pg/g	9.26	41.6
57117-41-6	1,2,3,7,8-PeCDF	U	5.46	pg/g	5.46	208
57117-31-4	2,3,4,7,8-PeCDF	U	4.93	pg/g	4.93	208
70648-26-9	1,2,3,4,7,8-HxCDF	U	7.63	pg/g	7.63	208
57117-44-9	1,2,3,6,7,8-HxCDF	J	17.7	pg/g	6.59	208
60851-34-5	2,3,4,6,7,8-HxCDF	U	7.48	pg/g	7.48	208
72918-21-9	1,2,3,7,8,9-HxCDF	U	10.3	pg/g	10.3	208
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	159	pg/g	8.08	208
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	11.7	pg/g	11.7	208
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	214	pg/g	27.3	416

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1310	1670	pg/g	78.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1390	1670	pg/g	83.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1350	1670	pg/g	81.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1350	1670	pg/g	80.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1640	1670	pg/g	98.4	(23%-140%)
13C-OCDD		2670	3330	pg/g	80.3	(17%-157%)
13C-2,3,7,8-TCDF		1730	1670	pg/g	104	(24%-169%)
13C-1,2,3,7,8-PeCDF		1450	1670	pg/g	87.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1520	1670	pg/g	91.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1410	1670	pg/g	84.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1470	1670	pg/g	88.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1460	1670	pg/g	87.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1500	1670	pg/g	90.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1390	1670	pg/g	83.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1510	1670	pg/g	90.7	(26%-138%)
37Cl-2,3,7,8-TCDD		173	167	pg/g	104	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328005	Date Collected: 07/10/2014 14:36	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 8.1
Client ID: SFRA-142		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/15/2014 15:34	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a_3-5		Dilution: 5
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		4070	pg/g	24.0	50.4
40321-76-4	1,2,3,7,8-PeCDD	U	11.9	pg/g	11.9	252
39227-28-6	1,2,3,4,7,8-HxCDD	U	26.4	pg/g	26.4	252
57653-85-7	1,2,3,6,7,8-HxCDD	J	50.7	pg/g	26.2	252
19408-74-3	1,2,3,7,8,9-HxCDD	U	27.8	pg/g	27.8	252
35822-46-9	1,2,3,4,6,7,8-HpCDD		759	pg/g	25.6	252
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11400	pg/g	67.9	504
51207-31-9	2,3,7,8-TCDF	J	27.4	pg/g	17.5	50.4
57117-41-6	1,2,3,7,8-PeCDF	U	9.83	pg/g	9.83	252
57117-31-4	2,3,4,7,8-PeCDF	U	9.45	pg/g	9.45	252
70648-26-9	1,2,3,4,7,8-HxCDF	J	20.5	pg/g	8.62	252
57117-44-9	1,2,3,6,7,8-HxCDF	J	32.9	pg/g	8.12	252
60851-34-5	2,3,4,6,7,8-HxCDF	J	15.3	pg/g	9.13	252
72918-21-9	1,2,3,7,8,9-HxCDF	U	13.6	pg/g	13.6	252
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	181	pg/g	12.3	252
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	20.4	pg/g	20.4	252
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	259	pg/g	36.5	504

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1730	2010	pg/g	85.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		1840	2010	pg/g	91.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1800	2010	pg/g	89.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1680	2010	pg/g	83.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2070	2010	pg/g	103	(23%-140%)
13C-OCDD		3410	4030	pg/g	84.7	(17%-157%)
13C-2,3,7,8-TCDF		2060	2010	pg/g	102	(24%-169%)
13C-1,2,3,7,8-PeCDF		1900	2010	pg/g	94.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		2000	2010	pg/g	99.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1810	2010	pg/g	90.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1930	2010	pg/g	95.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1910	2010	pg/g	94.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1800	2010	pg/g	89.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1870	2010	pg/g	92.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1930	2010	pg/g	95.6	(26%-138%)
37Cl-2,3,7,8-TCDD		218	201	pg/g	108	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 6328006	Date Collected: 07/10/2014 14:38	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/11/2014 09:50	%Moisture: 9.2
Client ID: SFRA-143		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/15/2014 16:22	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a_3-6		Dilution: 10
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.14 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		14900	pg/g	46.2	96.6
40321-76-4	1,2,3,7,8-PeCDD	U	20.5	pg/g	20.5	483
39227-28-6	1,2,3,4,7,8-HxCDD	U	35.5	pg/g	35.5	483
57653-85-7	1,2,3,6,7,8-HxCDD	J	105	pg/g	35.2	483
19408-74-3	1,2,3,7,8,9-HxCDD	J	42.5	pg/g	37.5	483
35822-46-9	1,2,3,4,6,7,8-HpCDD		1370	pg/g	40.4	483
3268-87-9	1,2,3,4,6,7,8,9-OCDD		14800	pg/g	115	966
51207-31-9	2,3,7,8-TCDF	J	90.1	pg/g	41.9	96.6
57117-41-6	1,2,3,7,8-PeCDF	U	18.6	pg/g	18.6	483
57117-31-4	2,3,4,7,8-PeCDF	U	16.2	pg/g	16.2	483
70648-26-9	1,2,3,4,7,8-HxCDF	J	29.4	pg/g	23.8	483
57117-44-9	1,2,3,6,7,8-HxCDF	J	58.5	pg/g	22.2	483
60851-34-5	2,3,4,6,7,8-HxCDF	U	23.4	pg/g	23.4	483
72918-21-9	1,2,3,7,8,9-HxCDF	U	37.9	pg/g	37.9	483
67562-39-4	1,2,3,4,6,7,8-HpCDF		671	pg/g	33.2	483
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	46.9	pg/g	46.9	483
39001-02-0	1,2,3,4,6,7,8,9-OCDF		966	pg/g	54.5	966

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1670	1930	pg/g	86.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1710	1930	pg/g	88.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1560	1930	pg/g	80.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1690	1930	pg/g	87.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1910	1930	pg/g	98.7	(23%-140%)
13C-OCDD		2920	3860	pg/g	75.4	(17%-157%)
13C-2,3,7,8-TCDF		1960	1930	pg/g	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		1770	1930	pg/g	91.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1900	1930	pg/g	98.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1690	1930	pg/g	87.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1840	1930	pg/g	95.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1810	1930	pg/g	93.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1690	1930	pg/g	87.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1760	1930	pg/g	90.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1840	1930	pg/g	95.5	(26%-138%)
37Cl-2,3,7,8-TCDD		256	193	pg/g	133	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6328

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010901	LCS for batch 26393	13C-2,3,7,8-TCDD		94.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		116	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		91.4	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		86.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		110	(22%-166%)
		13C-OCDD		91.4	(13%-199%)
		13C-2,3,7,8-TCDF		109	(22%-152%)
		13C-1,2,3,7,8-PeCDF		112	(21%-192%)
		13C-2,3,4,7,8-PeCDF		119	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		99.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		101	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		102	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		98.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		101	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		108	(20%-186%)
		37Cl-2,3,7,8-TCDD		104	(31%-191%)
12010902	LCSD for batch 26393	13C-2,3,7,8-TCDD		88.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		107	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		96.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		86.1	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		114	(22%-166%)
		13C-OCDD		112	(13%-199%)
		13C-2,3,7,8-TCDF		108	(22%-152%)
		13C-1,2,3,7,8-PeCDF		106	(21%-192%)
		13C-2,3,4,7,8-PeCDF		111	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		99.3	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		99.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		101	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		100	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		107	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		120	(20%-186%)
		37Cl-2,3,7,8-TCDD		98.2	(31%-191%)
12010900	MB for batch 26393	13C-2,3,7,8-TCDD		83.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		104	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		102	(23%-140%)
		13C-OCDD		86.5	(17%-157%)
		13C-2,3,7,8-TCDF		98.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		97.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		107	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		89.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		93.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		101	(26%-138%)
		37Cl-2,3,7,8-TCDD		100	(35%-197%)
6328001	SFRA-138	13C-2,3,7,8-TCDD		86.3	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6328

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6328001	SFRA-138	13C-1,2,3,7,8-PeCDD		108	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		87.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		91.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		111	(23%-140%)
		13C-OCDD		40.7	(17%-157%)
		13C-2,3,7,8-TCDF		103	(24%-169%)
		13C-1,2,3,7,8-PeCDF		101	(24%-185%)
		13C-2,3,4,7,8-PeCDF		107	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		101	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		101	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		102	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		99.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		105	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		106	(26%-138%)
		37Cl-2,3,7,8-TCDD		105	(35%-197%)
12010903	SFRA-138(6328001MS)	13C-2,3,7,8-TCDD		91.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		112	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		89.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		117	(23%-140%)
		13C-OCDD		108	(17%-157%)
		13C-2,3,7,8-TCDF		109	(24%-169%)
		13C-1,2,3,7,8-PeCDF		108	(24%-185%)
		13C-2,3,4,7,8-PeCDF		116	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		101	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		95.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		100	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		103	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		109	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		119	(26%-138%)
37Cl-2,3,7,8-TCDD		108	(35%-197%)		
12010904	SFRA-138(6328001MSD)	13C-2,3,7,8-TCDD		88.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		115	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		92.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		110	(23%-140%)
		13C-OCDD		98.0	(17%-157%)
		13C-2,3,7,8-TCDF		98.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		107	(24%-185%)
		13C-2,3,4,7,8-PeCDF		115	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		95.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		95.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		96.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		96.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		100	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		109	(26%-138%)
37Cl-2,3,7,8-TCDD		99.0	(35%-197%)		
6328002	SFRA-139	13C-2,3,7,8-TCDD		86.2	D (25%-164%)
		13C-1,2,3,7,8-PeCDD		90.4	D (25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6328

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6328002	SFRA-139	13C-1,2,3,4,7,8-HxCDD		81.7 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		84.0 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		96.2 D	(23%-140%)
		13C-OCDD		75.1 D	(17%-157%)
		13C-2,3,7,8-TCDF		94.7 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.6 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		97.5 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		89.1 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.5 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		91.6 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.8 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		86.9 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		88.3 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		115 D	(35%-197%)
6328003	SFRA-140	13C-2,3,7,8-TCDD		73.4 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		73.8 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.3 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.3 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		98.9 D	(23%-140%)
		13C-OCDD		72.3 D	(17%-157%)
		13C-2,3,7,8-TCDF		92.3 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		76.4 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		81.6 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		84.5 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.8 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.7 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.7 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.0 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		86.3 D	(26%-138%)		
37Cl-2,3,7,8-TCDD		105 D	(35%-197%)		
6328004	SFRA-141	13C-2,3,7,8-TCDD		78.5 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.4 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.2 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.8 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		98.4 D	(23%-140%)
		13C-OCDD		80.3 D	(17%-157%)
		13C-2,3,7,8-TCDF		104 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.3 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.4 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		84.4 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.4 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.8 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		90.1 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.8 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		90.7 D	(26%-138%)		
37Cl-2,3,7,8-TCDD		104 D	(35%-197%)		
6328005	SFRA-142	13C-2,3,7,8-TCDD		85.9 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		91.1 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		89.2 D	(32%-141%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6328

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6328005	SFRA-142	13C-1,2,3,6,7,8-HxCDD		83.4 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		103 D	(23%-140%)
		13C-OCDD		84.7 D	(17%-157%)
		13C-2,3,7,8-TCDF		102 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.1 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		99.1 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		90.1 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		95.8 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		94.5 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		89.4 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		92.6 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		95.6 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		108 D	(35%-197%)
		6328006	SFRA-143	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				88.6 D	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				80.6 D	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				87.6 D	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				98.7 D	(23%-140%)
13C-OCDD				75.4 D	(17%-157%)
13C-2,3,7,8-TCDF				101 D	(24%-169%)
13C-1,2,3,7,8-PeCDF				91.7 D	(24%-185%)
13C-2,3,4,7,8-PeCDF				98.4 D	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				87.5 D	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				95.4 D	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				93.9 D	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				87.7 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				90.9 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		95.5 D	(26%-138%)		
37Cl-2,3,7,8-TCDD		133 D	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6328

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26393

Matrix: SOLID

Lab Sample ID: 12010901

Instrument: HRP763

Analysis Date: 07/14/2014 19:20

Dilution: 1

Analyst: JTF

Prep Batch ID: 26393

Batch ID: 26395

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	22.2	111	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	103	103	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	111	111	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	112	112	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	118	118	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	111	111	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	209	105	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	23.9	119	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	114	114	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	109	109	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	121	121	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	114	114	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	118	118	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	124	124	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	119	119	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	123	123	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	253	126	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6328
Client ID: SFRA-138(6328001MS)
Lab Sample ID: 12010903
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 10
Analysis Date: 07/14/2014 22:31
Prep Batch ID: 26393
Batch ID: 26395
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	MS 2,3,7,8-TCDD	220		869	62.7 *	70-130
40321-76-4	MS 1,2,3,7,8-PeCDD	1100	U	1180	107	70-130
39227-28-6	MS 1,2,3,4,7,8-HxCDD	1100	J	1340	121	70-130
57653-85-7	MS 1,2,3,6,7,8-HxCDD	1100	J	1240	112	70-130
19408-74-3	MS 1,2,3,7,8,9-HxCDD	1100	U	1420	129	70-130
35822-46-9	MS 1,2,3,4,6,7,8-HpCDD	1100		1480	95.6	70-130
3268-87-9	MS 1,2,3,4,6,7,8,9-OCDD	2200		12400	-414 *	70-130
51207-31-9	MS 2,3,7,8-TCDF	220	J	281	125	70-130
57117-41-6	MS 1,2,3,7,8-PeCDF	1100	J	1200	109	70-130
57117-31-4	MS 2,3,4,7,8-PeCDF	1100	J	1160	105	70-130
70648-26-9	MS 1,2,3,4,7,8-HxCDF	1100	U	1300	118	70-130
57117-44-9	MS 1,2,3,6,7,8-HxCDF	1100	U	1300	118	70-130
60851-34-5	MS 2,3,4,6,7,8-HxCDF	1100	U	1320	120	70-130
72918-21-9	MS 1,2,3,7,8,9-HxCDF	1100	U	1350	122	70-130
67562-39-4	MS 1,2,3,4,6,7,8-HpCDF	1100	J	1280	116	70-130
55673-89-7	MS 1,2,3,4,7,8,9-HpCDF	1100	U	1310	119	70-130
39001-02-0	MS 1,2,3,4,6,7,8,9-OCDF	2200	U	2740	124	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6328

Sample Type: Matrix Spike Duplicate

Client ID: SFRA-138(6328001MSD)

Matrix: SOLID

Lab Sample ID: 12010904

%Moisture: 10

Instrument: HRP763

Analysis Date: 07/14/2014 23:18

Dilution: 1

Analyst: JTF

Prep Batch ID: 26393

Batch ID: 26395

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	214		1030	140 *	70-130	17.1	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	1070	U	1120	105	70-130	5.03	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	1070	J	1210	112	70-130	10.5	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	1070	J	1220	113	70-130	1.96	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	1070	U	1330	125	70-130	6.31	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	1070		1480	98.7	70-130	0.239	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	2140		12100	-441 *	70-130	2.54	0-20
51207-31-9	MSD 2,3,7,8-TCDF	214	J	257	117	70-130	8.78	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	1070	J	1180	111	70-130	1.30	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	1070	J	1160	108	70-130	0.396	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	1070	U	1270	119	70-130	2.21	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	1070	U	1260	118	70-130	3.08	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	1070	U	1300	122	70-130	1.22	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	1070	U	1370	128	70-130	1.44	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	1070	J	1300	121	70-130	1.08	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	1070	U	1300	122	70-130	0.368	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	2140	U	2680	126	70-130	2.00	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6328
Client ID: MB for batch 26393
Lab Sample ID: 12010900
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 11-JUL-14

Matrix: SOLID
Data File: b14jul14a-10
Analyzed: 07/14/14 20:55

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26393	12010901	b14jul14a-8	07/14/14	1920
02 LCSD for batch 26393	12010902	b14jul14a-9	07/14/14	2007
03 SFRA-138	6328001	b14jul14a-11	07/14/14	2143
04 SFRA-138(6328001MS)	12010903	b14jul14a-12	07/14/14	2231
05 SFRA-138(6328001MSD)	12010904	b14jul14a-13	07/14/14	2318
06 SFRA-139	6328002	b14jul14a_3-2	07/15/14	1311
07 SFRA-140	6328003	b14jul14a_3-3	07/15/14	1359
08 SFRA-141	6328004	b14jul14a_3-4	07/15/14	1447
09 SFRA-142	6328005	b14jul14a_3-5	07/15/14	1534
10 SFRA-143	6328006	b14jul14a_3-6	07/15/14	1622
11 SFRA-139	6328002	A16JUL14A-4	07/16/14	0909
12 SFRA-140	6328003	A16JUL14A-5	07/16/14	0928

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010900		Matrix: SOLID
Client Sample: QC for batch 26393		
Client ID: MB for batch 26393		Prep Basis: As Received
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/14/2014 20:55	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a-10		Dilution: 1
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.404	pg/g	0.404	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.238	pg/g	0.238	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.308	pg/g	0.308	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.262	pg/g	0.262	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.3	pg/g	0.300	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.352	pg/g	0.352	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.624	pg/g	0.624	10.0
51207-31-9	2,3,7,8-TCDF	U	.236	pg/g	0.236	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.157	pg/g	0.157	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.155	pg/g	0.155	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.196	pg/g	0.196	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.226	pg/g	0.193	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.204	pg/g	0.204	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.29	pg/g	0.290	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.310	pg/g	0.246	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.374	pg/g	0.374	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.754	pg/g	0.754	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		167	200	pg/g	83.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		208	200	pg/g	104	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		167	200	pg/g	83.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		158	200	pg/g	79.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		204	200	pg/g	102	(23%-140%)
13C-OCDD		346	400	pg/g	86.5	(17%-157%)
13C-2,3,7,8-TCDF		197	200	pg/g	98.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		196	200	pg/g	97.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		214	200	pg/g	107	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		178	200	pg/g	89.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		174	200	pg/g	87.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		181	200	pg/g	90.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		176	200	pg/g	87.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		187	200	pg/g	93.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		203	200	pg/g	101	(26%-138%)
37Cl-2,3,7,8-TCDD		20.0	20.0	pg/g	100	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010901		Matrix: SOLID
Client Sample: QC for batch 26393		
Client ID: LCS for batch 26393		Prep Basis: As Received
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/14/2014 19:20	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a-8		Dilution: 1
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		22.2	pg/g	0.408	1.00
40321-76-4	1,2,3,7,8-PeCDD		103	pg/g	0.422	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		111	pg/g	0.680	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		112	pg/g	0.682	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		118	pg/g	0.724	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		111	pg/g	0.858	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		209	pg/g	1.63	10.0
51207-31-9	2,3,7,8-TCDF		23.9	pg/g	0.336	1.00
57117-41-6	1,2,3,7,8-PeCDF		114	pg/g	0.690	5.00
57117-31-4	2,3,4,7,8-PeCDF		109	pg/g	0.622	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		121	pg/g	0.948	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		114	pg/g	0.824	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		118	pg/g	0.904	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		124	pg/g	1.36	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		119	pg/g	0.656	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		123	pg/g	1.07	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		253	pg/g	1.53	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		189	200	pg/g	94.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		233	200	pg/g	116	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		183	200	pg/g	91.4	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		174	200	pg/g	86.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		219	200	pg/g	110	(22%-166%)
13C-OCDD		366	400	pg/g	91.4	(13%-199%)
13C-2,3,7,8-TCDF		218	200	pg/g	109	(22%-152%)
13C-1,2,3,7,8-PeCDF		225	200	pg/g	112	(21%-192%)
13C-2,3,4,7,8-PeCDF		239	200	pg/g	119	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		199	200	pg/g	99.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		202	200	pg/g	101	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		204	200	pg/g	102	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		198	200	pg/g	98.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		202	200	pg/g	101	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		216	200	pg/g	108	(20%-186%)
37Cl-2,3,7,8-TCDD		20.9	20.0	pg/g	104	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010902		Matrix: SOLID
Client Sample: QC for batch 26393		
Client ID: LCSDD for batch 26393		Prep Basis: As Received
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/14/2014 20:07	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a-9		Dilution: 1
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		22.3	pg/g	0.638	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.326	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		113	pg/g	0.766	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		110	pg/g	0.770	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		117	pg/g	0.814	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		113	pg/g	0.892	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		212	pg/g	1.50	10.0
51207-31-9	2,3,7,8-TCDF		24.3	pg/g	0.378	1.00
57117-41-6	1,2,3,7,8-PeCDF		110	pg/g	0.660	5.00
57117-31-4	2,3,4,7,8-PeCDF		110	pg/g	0.580	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		119	pg/g	0.980	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		117	pg/g	0.884	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		119	pg/g	1.00	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		125	pg/g	1.40	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		113	pg/g	0.842	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		119	pg/g	1.25	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		259	pg/g	1.39	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		177	200	pg/g	88.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		214	200	pg/g	107	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		193	200	pg/g	96.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		172	200	pg/g	86.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		228	200	pg/g	114	(22%-166%)
13C-OCDD		447	400	pg/g	112	(13%-199%)
13C-2,3,7,8-TCDF		215	200	pg/g	108	(22%-152%)
13C-1,2,3,7,8-PeCDF		211	200	pg/g	106	(21%-192%)
13C-2,3,4,7,8-PeCDF		223	200	pg/g	111	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		199	200	pg/g	99.3	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		200	200	pg/g	99.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		201	200	pg/g	101	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		200	200	pg/g	100	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		215	200	pg/g	107	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		240	200	pg/g	120	(20%-186%)
37Cl-2,3,7,8-TCDD		19.6	20.0	pg/g	98.2	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010903	Date Collected: 07/10/2014 14:23	Matrix: SOLID
Client Sample: QC for batch 26393	Date Received: 07/11/2014 09:50	%Moisture: 10
Client ID: SFRA-138(6328001MS)		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/14/2014 22:31	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a-12		Dilution: 1
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.01 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		869	pg/g	6.03	11.0
40321-76-4	1,2,3,7,8-PeCDD		1180	pg/g	5.10	55.0
39227-28-6	1,2,3,4,7,8-HxCDD		1340	pg/g	9.42	55.0
57653-85-7	1,2,3,6,7,8-HxCDD		1240	pg/g	9.57	55.0
19408-74-3	1,2,3,7,8,9-HxCDD		1420	pg/g	10.1	55.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		1480	pg/g	15.5	55.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12400	pg/g	26.4	110
51207-31-9	2,3,7,8-TCDF		281	pg/g	4.18	11.0
57117-41-6	1,2,3,7,8-PeCDF		1200	pg/g	1.55	55.0
57117-31-4	2,3,4,7,8-PeCDF		1160	pg/g	1.43	55.0
70648-26-9	1,2,3,4,7,8-HxCDF		1300	pg/g	11.6	55.0
57117-44-9	1,2,3,6,7,8-HxCDF		1300	pg/g	11.0	55.0
60851-34-5	2,3,4,6,7,8-HxCDF		1320	pg/g	11.5	55.0
72918-21-9	1,2,3,7,8,9-HxCDF		1350	pg/g	16.0	55.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1280	pg/g	7.19	55.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1310	pg/g	11.2	55.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2740	pg/g	15.1	110

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2010	2200	pg/g	91.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		2470	2200	pg/g	112	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1970	2200	pg/g	89.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1880	2200	pg/g	85.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2570	2200	pg/g	117	(23%-140%)
13C-OCDD		4750	4400	pg/g	108	(17%-157%)
13C-2,3,7,8-TCDF		2400	2200	pg/g	109	(24%-169%)
13C-1,2,3,7,8-PeCDF		2370	2200	pg/g	108	(24%-185%)
13C-2,3,4,7,8-PeCDF		2550	2200	pg/g	116	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2210	2200	pg/g	101	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2100	2200	pg/g	95.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2210	2200	pg/g	100	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2270	2200	pg/g	103	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2400	2200	pg/g	109	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2620	2200	pg/g	119	(26%-138%)
37Cl-2,3,7,8-TCDD		239	220	pg/g	108	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6328	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010904	Date Collected: 07/10/2014 14:23	Matrix: SOLID
Client Sample: QC for batch 26393	Date Received: 07/11/2014 09:50	%Moisture: 10
Client ID: SFRA-138(6328001MSD)		Prep Basis: Dry Weight
Batch ID: 26395	Method: EPA Method 1613B	
Run Date: 07/14/2014 23:18	Analyst: JTF	Instrument: HRP763
Data File: b14jul14a-13		Dilution: 1
Prep Batch: 26393	Prep Method: SW846 3540C	
Prep Date: 11-JUL-14	Prep Aliquot: 1.04 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1030	pg/g	6.43	10.7
40321-76-4	1,2,3,7,8-PeCDD		1120	pg/g	5.00	53.4
39227-28-6	1,2,3,4,7,8-HxCDD		1210	pg/g	11.3	53.4
57653-85-7	1,2,3,6,7,8-HxCDD		1220	pg/g	11.4	53.4
19408-74-3	1,2,3,7,8,9-HxCDD		1330	pg/g	12.1	53.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		1480	pg/g	12.3	53.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12100	pg/g	25.2	107
51207-31-9	2,3,7,8-TCDF		257	pg/g	7.52	10.7
57117-41-6	1,2,3,7,8-PeCDF		1180	pg/g	2.33	53.4
57117-31-4	2,3,4,7,8-PeCDF		1160	pg/g	2.16	53.4
70648-26-9	1,2,3,4,7,8-HxCDF		1270	pg/g	10.1	53.4
57117-44-9	1,2,3,6,7,8-HxCDF		1260	pg/g	9.94	53.4
60851-34-5	2,3,4,6,7,8-HxCDF		1300	pg/g	10.2	53.4
72918-21-9	1,2,3,7,8,9-HxCDF		1370	pg/g	14.4	53.4
67562-39-4	1,2,3,4,6,7,8-HpCDF		1300	pg/g	6.97	53.4
55673-89-7	1,2,3,4,7,8,9-HpCDF		1300	pg/g	11.8	53.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2680	pg/g	16.5	107

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1880	2140	pg/g	88.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		2450	2140	pg/g	115	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1980	2140	pg/g	92.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1760	2140	pg/g	82.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2340	2140	pg/g	110	(23%-140%)
13C-OCDD		4190	4270	pg/g	98.0	(17%-157%)
13C-2,3,7,8-TCDF		2090	2140	pg/g	98.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		2280	2140	pg/g	107	(24%-185%)
13C-2,3,4,7,8-PeCDF		2460	2140	pg/g	115	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2040	2140	pg/g	95.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2040	2140	pg/g	95.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		2060	2140	pg/g	96.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2050	2140	pg/g	96.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2140	2140	pg/g	100	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		2320	2140	pg/g	109	(26%-138%)
37Cl-2,3,7,8-TCDD		211	214	pg/g	99.0	(35%-197%)

Comments:

July 23, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6361

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 18, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: Tetra Tech	Work Order: 6361
Shipping Company: Fed Ex	Date/Time Received: 18 Jul 14 1000

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			✓
Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?			✓	Preservation Method: ice bags blue ice dry ice none other (describe) 9.0
4	Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	✓			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	✓			

Comments:

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6361**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26460
Clean Up Batch Number: 26459
Extraction Batch Number: 26458

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6361001	SFRA-144
6361002	SFRA-145
6361003	SFRA-146
6361004	SFRA-147
6361005	SFRA-148
12010964	Method Blank (MB)
12010965	Laboratory Control Sample (LCS)
12010966	Laboratory Control Sample Duplicate (LCSD)
12010967	6361001(SFRA-144) Matrix Spike (MS)
12010968	6361001(SFRA-144) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information**Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6361001 (SFRA-144) - Batch 26460 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery Statement

One MS recovery for this SDG was not within the acceptance limits. The failure confirms in the matrix spike duplicate and can be attributed to matrix interference. 12010967 (SFRA-144) and 12010968 (SFRA-144) - Batch 26460.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information**Holding Time Specifications**

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the

AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26460.

Sample Dilutions

Samples 12010967 (SFRA-144), 12010968 (SFRA-144), 6361001 (SFRA-144), 6361002 (SFRA-145), 6361003 (SFRA-146) and 6361005 (SFRA-148)- Batch 26460 were diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6361 CFA Work Order: 6361

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 23 JUL 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 6361001	Date Collected: 07/17/2014 09:00	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/18/2014 10:00	%Moisture: 10.4
Client ID: SFRA-144		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 13:08	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-6		Dilution: 5
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.65 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3100	pg/g	23.9	33.8
40321-76-4	1,2,3,7,8-PeCDD	U	9.55	pg/g	9.55	169
39227-28-6	1,2,3,4,7,8-HxCDD	U	14.2	pg/g	14.2	169
57653-85-7	1,2,3,6,7,8-HxCDD	J	44.3	pg/g	14.6	169
19408-74-3	1,2,3,7,8,9-HxCDD	U	15.3	pg/g	15.3	169
35822-46-9	1,2,3,4,6,7,8-HpCDD		448	pg/g	30.3	169
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10000	pg/g	62.9	338
51207-31-9	2,3,7,8-TCDF	J	21.5	pg/g	13.9	33.8
57117-41-6	1,2,3,7,8-PeCDF	U	9.54	pg/g	9.54	169
57117-31-4	2,3,4,7,8-PeCDF	U	8.09	pg/g	8.09	169
70648-26-9	1,2,3,4,7,8-HxCDF	U	9.74	pg/g	9.74	169
57117-44-9	1,2,3,6,7,8-HxCDF	U	8.98	pg/g	8.98	169
60851-34-5	2,3,4,6,7,8-HxCDF	U	10.3	pg/g	10.3	169
72918-21-9	1,2,3,7,8,9-HxCDF	U	14.2	pg/g	14.2	169
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	117	pg/g	9.27	169
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	14.6	pg/g	14.6	169
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	122	pg/g	33.3	338

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1140	1350	pg/g	84.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1210	1350	pg/g	89.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1020	1350	pg/g	75.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1180	1350	pg/g	87.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1270	1350	pg/g	93.9	(23%-140%)
13C-OCDD		2110	2710	pg/g	78.0	(17%-157%)
13C-2,3,7,8-TCDF		1250	1350	pg/g	92.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1160	1350	pg/g	85.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1260	1350	pg/g	93.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1110	1350	pg/g	82.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1220	1350	pg/g	90.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1170	1350	pg/g	86.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1120	1350	pg/g	83.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1210	1350	pg/g	89.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1180	1350	pg/g	87.5	(26%-138%)
37Cl-2,3,7,8-TCDD		147	135	pg/g	108	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 6361002	Date Collected: 07/17/2014 09:10	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/18/2014 10:00	%Moisture: 15.7
Client ID: SFRA-145		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 15:31	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-9		Dilution: 5
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.23 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		5690	pg/g	39.5	48.2
40321-76-4	1,2,3,7,8-PeCDD	U	13	pg/g	13.0	241
39227-28-6	1,2,3,4,7,8-HxCDD	U	21.4	pg/g	21.4	241
57653-85-7	1,2,3,6,7,8-HxCDD	J	46.1	pg/g	21.4	241
19408-74-3	1,2,3,7,8,9-HxCDD	U	22.6	pg/g	22.6	241
35822-46-9	1,2,3,4,6,7,8-HpCDD		814	pg/g	83.1	241
3268-87-9	1,2,3,4,6,7,8,9-OCDD		13600	pg/g	178	482
51207-31-9	2,3,7,8-TCDF	J	34.0	pg/g	21.6	48.2
57117-41-6	1,2,3,7,8-PeCDF	U	13	pg/g	13.0	241
57117-31-4	2,3,4,7,8-PeCDF	U	12.4	pg/g	12.4	241
70648-26-9	1,2,3,4,7,8-HxCDF	U	18.5	pg/g	18.5	241
57117-44-9	1,2,3,6,7,8-HxCDF	U	17	pg/g	17.0	241
60851-34-5	2,3,4,6,7,8-HxCDF	U	19.7	pg/g	19.7	241
72918-21-9	1,2,3,7,8,9-HxCDF	U	32	pg/g	32.0	241
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	203	pg/g	44.9	241
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	79.6	pg/g	79.6	241
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	302	pg/g	74.2	482

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1590	1930	pg/g	82.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1530	1930	pg/g	79.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1320	1930	pg/g	68.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1690	1930	pg/g	87.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1640	1930	pg/g	85.0	(23%-140%)
13C-OCDD		2620	3860	pg/g	67.9	(17%-157%)
13C-2,3,7,8-TCDF		1750	1930	pg/g	90.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		1580	1930	pg/g	82.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		1610	1930	pg/g	83.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1520	1930	pg/g	78.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1790	1930	pg/g	92.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1710	1930	pg/g	88.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1610	1930	pg/g	83.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1580	1930	pg/g	82.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1540	1930	pg/g	79.7	(26%-138%)
37Cl-2,3,7,8-TCDD		205	193	pg/g	106	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 6361003	Date Collected: 07/17/2014 14:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/18/2014 10:00	%Moisture: 14.7
Client ID: SFRA-146		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 16:19	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-10		Dilution: 5
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.56 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		3570	pg/g	24.8	37.6
40321-76-4	1,2,3,7,8-PeCDD	U	13.6	pg/g	13.6	188
39227-28-6	1,2,3,4,7,8-HxCDD	U	33.2	pg/g	33.2	188
57653-85-7	1,2,3,6,7,8-HxCDD	J	40.1	pg/g	31.0	188
19408-74-3	1,2,3,7,8,9-HxCDD	U	33.8	pg/g	33.8	188
35822-46-9	1,2,3,4,6,7,8-HpCDD		643	pg/g	42.2	188
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10800	pg/g	125	376
51207-31-9	2,3,7,8-TCDF	J	26.6	pg/g	16.5	37.6
57117-41-6	1,2,3,7,8-PeCDF	U	15.9	pg/g	15.9	188
57117-31-4	2,3,4,7,8-PeCDF	U	9.65	pg/g	9.65	188
70648-26-9	1,2,3,4,7,8-HxCDF	U	13.3	pg/g	13.3	188
57117-44-9	1,2,3,6,7,8-HxCDF	U	10	pg/g	10.0	188
60851-34-5	2,3,4,6,7,8-HxCDF	U	10.9	pg/g	10.9	188
72918-21-9	1,2,3,7,8,9-HxCDF	U	16.2	pg/g	16.2	188
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	146	pg/g	19.5	188
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	30.8	pg/g	30.8	188
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	307	pg/g	83.4	376

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1310	1500	pg/g	87.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1270	1500	pg/g	84.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1050	1500	pg/g	70.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1220	1500	pg/g	81.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1130	1500	pg/g	75.4	(23%-140%)
13C-OCDD		1890	3010	pg/g	62.7	(17%-157%)
13C-2,3,7,8-TCDF		1360	1500	pg/g	90.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1210	1500	pg/g	80.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1310	1500	pg/g	87.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1130	1500	pg/g	75.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1250	1500	pg/g	83.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1210	1500	pg/g	80.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1230	1500	pg/g	81.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1170	1500	pg/g	77.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1170	1500	pg/g	78.2	(26%-138%)
37Cl-2,3,7,8-TCDD		158	150	pg/g	105	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 6361004	Date Collected: 07/17/2014 15:15	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/18/2014 10:00	%Moisture: 17
Client ID: SFRA-147		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 17:07	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-11		Dilution: 1
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.33 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		335	pg/g	4.46	9.06
40321-76-4	1,2,3,7,8-PeCDD	U	2.14	pg/g	2.14	45.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	4.47	pg/g	4.47	45.3
57653-85-7	1,2,3,6,7,8-HxCDD	U	7.03	pg/g	7.03	45.3
19408-74-3	1,2,3,7,8,9-HxCDD	U	4.53	pg/g	4.53	45.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		106	pg/g	7.43	45.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		4940	pg/g	27.7	90.6
51207-31-9	2,3,7,8-TCDF	J	3.93	pg/g	3.26	9.06
57117-41-6	1,2,3,7,8-PeCDF	U	4.24	pg/g	4.24	45.3
57117-31-4	2,3,4,7,8-PeCDF	U	1.81	pg/g	1.81	45.3
70648-26-9	1,2,3,4,7,8-HxCDF	U	2.32	pg/g	2.32	45.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.19	pg/g	2.19	45.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	2.37	pg/g	2.37	45.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	3.71	pg/g	3.71	45.3
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	21.5	pg/g	3.84	45.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	6.79	pg/g	6.79	45.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	32.6	pg/g	9.89	90.6

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1580	1810	pg/g	87.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1570	1810	pg/g	86.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1450	1810	pg/g	79.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1510	1810	pg/g	83.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1590	1810	pg/g	87.8	(23%-140%)
13C-OCDD		2780	3620	pg/g	76.7	(17%-157%)
13C-2,3,7,8-TCDF		1700	1810	pg/g	94.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1510	1810	pg/g	83.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1660	1810	pg/g	91.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1450	1810	pg/g	80.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1600	1810	pg/g	88.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1600	1810	pg/g	88.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1500	1810	pg/g	82.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1600	1810	pg/g	88.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1540	1810	pg/g	84.8	(26%-138%)
37Cl-2,3,7,8-TCDD		187	181	pg/g	103	(35%-197%)

Comments:

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 6361005	Date Collected: 07/17/2014 15:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/18/2014 10:00	%Moisture: 21.7
Client ID: SFRA-148		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/23/2014 09:50	Analyst: JTF	Instrument: HRP750
Data File: A23JUL14A-4		Dilution: 10
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		163	pg/g	33.2	113

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 6361005	Date Collected: 07/17/2014 15:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/18/2014 10:00	%Moisture: 21.7
Client ID: SFRA-148		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 17:55	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-12		Dilution: 10
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.13 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		24400	pg/g	58.3	113
40321-76-4	1,2,3,7,8-PeCDD	U	32.5	pg/g	32.5	565
39227-28-6	1,2,3,4,7,8-HxCDD	U	62.6	pg/g	62.6	565
57653-85-7	1,2,3,6,7,8-HxCDD	J	139	pg/g	55.6	565
19408-74-3	1,2,3,7,8,9-HxCDD	U	62.1	pg/g	62.1	565
35822-46-9	1,2,3,4,6,7,8-HpCDD		1420	pg/g	156	565
3268-87-9	1,2,3,4,6,7,8,9-OCDD		16000	pg/g	319	1130
51207-31-9	2,3,7,8-TCDF		160	pg/g	51.5	113
57117-41-6	1,2,3,7,8-PeCDF	U	22.5	pg/g	22.5	565
57117-31-4	2,3,4,7,8-PeCDF	U	20.8	pg/g	20.8	565
70648-26-9	1,2,3,4,7,8-HxCDF	J	39.3	pg/g	24.6	565
57117-44-9	1,2,3,6,7,8-HxCDF	U	25.1	pg/g	25.1	565
60851-34-5	2,3,4,6,7,8-HxCDF	J	33.2	pg/g	24.6	565
72918-21-9	1,2,3,7,8,9-HxCDF	U	34.1	pg/g	34.1	565
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	491	pg/g	41.6	565
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	91.5	pg/g	91.5	565
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	521	pg/g	145	1130

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		2020	2260	pg/g	89.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1900	2260	pg/g	84.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1830	2260	pg/g	81.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		2080	2260	pg/g	91.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2090	2260	pg/g	92.3	(23%-140%)
13C-OCDD		3190	4520	pg/g	70.7	(17%-157%)
13C-2,3,7,8-TCDF		2050	2260	pg/g	90.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1970	2260	pg/g	87.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		2060	2260	pg/g	91.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		2000	2260	pg/g	88.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		2080	2260	pg/g	92.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1990	2260	pg/g	88.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		2050	2260	pg/g	90.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		2210	2260	pg/g	97.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1960	2260	pg/g	86.7	(26%-138%)
37Cl-2,3,7,8-TCDD		333	226	pg/g	147	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6361

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12010965	LCS for batch 26458	13C-2,3,7,8-TCDD		90.6	(20%-175%)
		13C-1,2,3,7,8-PeCDD		95.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		84.8	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		84.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		97.9	(22%-166%)
		13C-OCDD		87.4	(13%-199%)
		13C-2,3,7,8-TCDF		96.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		90.3	(21%-192%)
		13C-2,3,4,7,8-PeCDF		97.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		85.3	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		85.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		88.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		85.9	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		88.7	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		92.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		107	(31%-191%)
12010966	LCSD for batch 26458	13C-2,3,7,8-TCDD		83.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		84.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		74.8	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		77.7	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		88.7	(22%-166%)
		13C-OCDD		76.5	(13%-199%)
		13C-2,3,7,8-TCDF		90.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		84.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		88.6	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		78.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		79.1	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		79.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		81.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		84.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		104	(31%-191%)
12010964	MB for batch 26458	13C-2,3,7,8-TCDD		90.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		90.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.6	(23%-140%)
		13C-OCDD		81.9	(17%-157%)
		13C-2,3,7,8-TCDF		95.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		95.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		87.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		84.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		91.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		102	(35%-197%)
6361001	SFRA-144	13C-2,3,7,8-TCDD		84.6	D (25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6361

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6361001	SFRA-144	13C-1,2,3,7,8-PeCDD		89.5 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		75.7 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		87.4 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.9 D	(23%-140%)
		13C-OCDD		78.0 D	(17%-157%)
		13C-2,3,7,8-TCDF		92.6 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.6 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.0 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.0 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		90.2 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.7 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.0 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		89.3 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		87.5 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		108 D	(35%-197%)
12010967	SFRA-144(6361001MS)	13C-2,3,7,8-TCDD		85.5 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.2 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.6 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.1 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.8 D	(23%-140%)
		13C-OCDD		80.3 D	(17%-157%)
		13C-2,3,7,8-TCDF		92.1 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.4 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.4 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		84.5 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		91.7 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.9 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.0 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.5 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.6 D	(26%-138%)
37Cl-2,3,7,8-TCDD		106 D	(35%-197%)		
12010968	SFRA-144(6361001MSD)	13C-2,3,7,8-TCDD		90.6 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.1 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.9 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.9 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		101 D	(23%-140%)
		13C-OCDD		86.9 D	(17%-157%)
		13C-2,3,7,8-TCDF		94.2 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.2 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.3 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		91.6 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		100 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		94.7 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		88.1 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		96.6 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		93.4 D	(26%-138%)
37Cl-2,3,7,8-TCDD		113 D	(35%-197%)		
6361002	SFRA-145	13C-2,3,7,8-TCDD		82.3 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.4 D	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6361

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6361002	SFRA-145	13C-1,2,3,4,7,8-HxCDD		68.3 D	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		87.9 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.0 D	(23%-140%)
		13C-OCDD		67.9 D	(17%-157%)
		13C-2,3,7,8-TCDF		90.6 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		82.0 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		83.5 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.7 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.7 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.6 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.5 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.2 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.7 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		106 D	(35%-197%)
		6361003	SFRA-146	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				84.7 D	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				70.1 D	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				81.1 D	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				75.4 D	(23%-140%)
13C-OCDD				62.7 D	(17%-157%)
13C-2,3,7,8-TCDF				90.3 D	(24%-169%)
13C-1,2,3,7,8-PeCDF				80.3 D	(24%-185%)
13C-2,3,4,7,8-PeCDF				87.1 D	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				75.2 D	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				83.4 D	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				80.3 D	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				81.6 D	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				77.9 D	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				78.2 D	(26%-138%)
37Cl-2,3,7,8-TCDD		105 D	(35%-197%)		
6361004	SFRA-147	13C-2,3,7,8-TCDD		87.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.8	(23%-140%)
		13C-OCDD		76.7	(17%-157%)
		13C-2,3,7,8-TCDF		94.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		84.8	(26%-138%)
37Cl-2,3,7,8-TCDD		103	(35%-197%)		
6361005	SFRA-148	13C-2,3,7,8-TCDD		89.4 D	(25%-164%)
		13C-1,2,3,7,8-PeCDD		84.2 D	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.2 D	(32%-141%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6361

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6361005	SFRA-148	13C-1,2,3,6,7,8-HxCDD		91.9 D	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.3 D	(23%-140%)
		13C-OCDD		70.7 D	(17%-157%)
		13C-2,3,7,8-TCDF		90.8 D	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.2 D	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.0 D	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		88.7 D	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.2 D	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.0 D	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		90.7 D	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		97.6 D	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		86.7 D	(26%-138%)
		37Cl-2,3,7,8-TCDD		147 D	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6361

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26458

Matrix: SOLID

Lab Sample ID: 12010965

Instrument: HRP763

Analysis Date: 07/22/2014 10:46

Dilution: 1

Analyst: JTF

Prep Batch ID: 26458

Batch ID: 26460

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.2	106	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	103	103	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	105	105	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	103	103	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	109	109	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	102	102	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	206	103	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	21.2	106	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	111	111	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	109	109	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	116	116	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	117	117	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	114	114	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	125	125	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	115	115	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	118	118	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	225	112	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6361
Client ID: SFRA-144(6361001MS)
Lab Sample ID: 12010967
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 10.4
Analysis Date: 07/22/2014 13:56
Prep Batch ID: 26458
Batch ID: 26460
Dilution: 5

CAS No.	Parmname	Amount Added		Spike Conc.		Recovery	Acceptance
		pg/g		pg/g		%	Limits
1746-01-6	MS	2,3,7,8-TCDD	143		2870	-161 *	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	715	U	721	101	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	715	U	734	103	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	715	J	813	107	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	715	U	810	113	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	715		1160	100	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	1430		11300	88.9	70-130
51207-31-9	MS	2,3,7,8-TCDF	143	J	166	101	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	715	U	759	106	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	715	U	776	108	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	715	U	778	109	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	715	U	805	113	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	715	U	810	113	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	715	U	856	120	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	715	J	956	117	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	715	U	894	125	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	1430	J	1680	109	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6361
Client ID: SFRA-144(6361001MSD)
Lab Sample ID: 12010968
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 10.4
Analysis Date: 07/22/2014 14:44
Prep Batch ID: 26458
Batch ID: 26460
Dilution: 5

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	138		2880	-162 *	70-130	0.240	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	689	U	788	114	70-130	8.80	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	689	U	728	106	70-130	0.736	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	689	J	778	107	70-130	4.34	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	689	U	707	103	70-130	13.5	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	689		1180	106	70-130	1.32	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	1380		11500	108	70-130	1.86	0-20
51207-31-9	MSD 2,3,7,8-TCDF	138	J	174	111	70-130	4.43	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	689	U	764	111	70-130	0.642	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	689	U	734	107	70-130	5.63	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	689	U	803	117	70-130	3.15	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	689	U	794	115	70-130	1.45	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	689	U	812	118	70-130	0.169	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	689	U	864	125	70-130	0.944	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	689	J	908	115	70-130	5.14	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	689	U	819	119	70-130	8.73	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	1380	J	1830	124	70-130	8.20	0-20

Method Blank Summary

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SDG Number: 6361
Client ID: MB for batch 26458
Lab Sample ID: 12010964
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 18-JUL-14

Matrix: SOLID
Data File: b22jul14a-5
Analyzed: 07/22/14 12:20

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26458	12010965	b22jul14a-3	07/22/14	1046
02 LCSD for batch 26458	12010966	b22jul14a-4	07/22/14	1133
03 SFRA-144	6361001	b22jul14a-6	07/22/14	1308
04 SFRA-144(6361001MS)	12010967	b22jul14a-7	07/22/14	1356
05 SFRA-144(6361001MSD)	12010968	b22jul14a-8	07/22/14	1444
06 SFRA-145	6361002	b22jul14a-9	07/22/14	1531
07 SFRA-146	6361003	b22jul14a-10	07/22/14	1619
08 SFRA-147	6361004	b22jul14a-11	07/22/14	1707
09 SFRA-148	6361005	b22jul14a-12	07/22/14	1755
10 SFRA-148	6361005	A23JUL14A-4	07/23/14	0950

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010964		Matrix: SOLID
Client Sample: QC for batch 26458		
Client ID: MB for batch 26458		Prep Basis: As Received
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 12:20	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-5		Dilution: 1
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.328	pg/g	0.328	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.14	pg/g	0.140	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.226	pg/g	0.226	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.236	pg/g	0.236	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.246	pg/g	0.246	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.328	pg/g	0.328	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.89	pg/g	0.890	10.0
51207-31-9	2,3,7,8-TCDF	U	.216	pg/g	0.216	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.121	pg/g	0.121	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.117	pg/g	0.117	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.16	pg/g	0.160	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.152	pg/g	0.152	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.174	pg/g	0.174	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.246	pg/g	0.246	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.187	pg/g	0.187	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.314	pg/g	0.314	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.796	pg/g	0.796	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		180	200	pg/g	90.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		181	200	pg/g	90.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		170	200	pg/g	85.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		164	200	pg/g	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		189	200	pg/g	94.6	(23%-140%)
13C-OCDD		327	400	pg/g	81.9	(17%-157%)
13C-2,3,7,8-TCDF		191	200	pg/g	95.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		180	200	pg/g	90.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		191	200	pg/g	95.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		175	200	pg/g	87.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		169	200	pg/g	84.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		174	200	pg/g	87.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		171	200	pg/g	85.4	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		181	200	pg/g	90.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		182	200	pg/g	91.1	(26%-138%)
37Cl-2,3,7,8-TCDD		20.3	20.0	pg/g	102	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010965		Matrix: SOLID
Client Sample: QC for batch 26458		
Client ID: LCS for batch 26458		Prep Basis: As Received
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 10:46	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-3		Dilution: 1
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.2	pg/g	0.360	1.00
40321-76-4	1,2,3,7,8-PeCDD		103	pg/g	0.268	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		105	pg/g	0.526	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		103	pg/g	0.496	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		109	pg/g	0.540	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	0.724	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		206	pg/g	1.10	10.0
51207-31-9	2,3,7,8-TCDF		21.2	pg/g	0.256	1.00
57117-41-6	1,2,3,7,8-PeCDF		111	pg/g	0.520	5.00
57117-31-4	2,3,4,7,8-PeCDF		109	pg/g	0.424	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		116	pg/g	0.662	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		117	pg/g	0.610	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		114	pg/g	0.678	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		125	pg/g	0.962	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		115	pg/g	0.710	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		118	pg/g	1.23	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		225	pg/g	1.44	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		181	200	pg/g	90.6	(20%-175%)
13C-1,2,3,7,8-PeCDD		191	200	pg/g	95.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		170	200	pg/g	84.8	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		170	200	pg/g	84.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		196	200	pg/g	97.9	(22%-166%)
13C-OCDD		350	400	pg/g	87.4	(13%-199%)
13C-2,3,7,8-TCDF		193	200	pg/g	96.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		181	200	pg/g	90.3	(21%-192%)
13C-2,3,4,7,8-PeCDF		194	200	pg/g	97.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		171	200	pg/g	85.3	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		172	200	pg/g	85.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		177	200	pg/g	88.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		172	200	pg/g	85.9	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		177	200	pg/g	88.7	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		184	200	pg/g	92.1	(20%-186%)
37Cl-2,3,7,8-TCDD		21.5	20.0	pg/g	107	(31%-191%)

Comments:

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Sample Summary**

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SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010966		Matrix: SOLID
Client Sample: QC for batch 26458		
Client ID: LCSD for batch 26458		Prep Basis: As Received
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 11:33	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-4		Dilution: 1
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.4	pg/g	0.408	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.406	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		109	pg/g	0.556	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		107	pg/g	0.554	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		118	pg/g	0.588	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		106	pg/g	0.814	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		232	pg/g	1.82	10.0
51207-31-9	2,3,7,8-TCDF		21.3	pg/g	0.290	1.00
57117-41-6	1,2,3,7,8-PeCDF		111	pg/g	0.388	5.00
57117-31-4	2,3,4,7,8-PeCDF		109	pg/g	0.348	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		117	pg/g	0.836	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		118	pg/g	0.772	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		114	pg/g	0.896	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		123	pg/g	1.24	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		113	pg/g	0.568	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		118	pg/g	0.956	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		235	pg/g	1.70	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		167	200	pg/g	83.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		169	200	pg/g	84.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		150	200	pg/g	74.8	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		155	200	pg/g	77.7	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		177	200	pg/g	88.7	(22%-166%)
13C-OCDD		306	400	pg/g	76.5	(13%-199%)
13C-2,3,7,8-TCDF		181	200	pg/g	90.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		169	200	pg/g	84.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		177	200	pg/g	88.6	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		157	200	pg/g	78.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		158	200	pg/g	79.1	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		158	200	pg/g	79.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		164	200	pg/g	81.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		170	200	pg/g	84.9	(20%-186%)
37Cl-2,3,7,8-TCDD		20.7	20.0	pg/g	104	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
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SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010967	Date Collected: 07/17/2014 09:00	Matrix: SOLID
Client Sample: QC for batch 26458	Date Received: 07/18/2014 10:00	%Moisture: 10.4
Client ID: SFRA-144(6361001MS)		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 13:56	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-7		Dilution: 5
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.56 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2870	pg/g	21.2	35.8
40321-76-4	1,2,3,7,8-PeCDD		721	pg/g	12.7	179
39227-28-6	1,2,3,4,7,8-HxCDD		734	pg/g	27.3	179
57653-85-7	1,2,3,6,7,8-HxCDD		813	pg/g	28.0	179
19408-74-3	1,2,3,7,8,9-HxCDD		810	pg/g	29.3	179
35822-46-9	1,2,3,4,6,7,8-HpCDD		1160	pg/g	40.2	179
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11300	pg/g	88.6	358
51207-31-9	2,3,7,8-TCDF		166	pg/g	17.2	35.8
57117-41-6	1,2,3,7,8-PeCDF		759	pg/g	18.2	179
57117-31-4	2,3,4,7,8-PeCDF		776	pg/g	16.3	179
70648-26-9	1,2,3,4,7,8-HxCDF		778	pg/g	24.8	179
57117-44-9	1,2,3,6,7,8-HxCDF		805	pg/g	22.2	179
60851-34-5	2,3,4,6,7,8-HxCDF		810	pg/g	26.5	179
72918-21-9	1,2,3,7,8,9-HxCDF		856	pg/g	42.8	179
67562-39-4	1,2,3,4,6,7,8-HpCDF		956	pg/g	20.0	179
55673-89-7	1,2,3,4,7,8,9-HpCDF		894	pg/g	40.8	179
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1680	pg/g	51.4	358

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1220	1430	pg/g	85.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1230	1430	pg/g	86.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1180	1430	pg/g	82.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1220	1430	pg/g	85.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1330	1430	pg/g	92.8	(23%-140%)
13C-OCDD		2300	2860	pg/g	80.3	(17%-157%)
13C-2,3,7,8-TCDF		1320	1430	pg/g	92.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1210	1430	pg/g	84.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1280	1430	pg/g	89.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1210	1430	pg/g	84.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1310	1430	pg/g	91.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1270	1430	pg/g	88.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1240	1430	pg/g	87.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1310	1430	pg/g	91.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1200	1430	pg/g	83.6	(26%-138%)
37Cl-2,3,7,8-TCDD		152	143	pg/g	106	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
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Sample Summary**

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SDG Number: 6361	Client: TETR001	Project: TETR00114
Lab Sample ID: 12010968	Date Collected: 07/17/2014 09:00	Matrix: SOLID
Client Sample: QC for batch 26458	Date Received: 07/18/2014 10:00	%Moisture: 10.4
Client ID: SFRA-144(6361001MSD)		Prep Basis: Dry Weight
Batch ID: 26460	Method: EPA Method 1613B	
Run Date: 07/22/2014 14:44	Analyst: JTF	Instrument: HRP763
Data File: b22jul14a-8		Dilution: 5
Prep Batch: 26458	Prep Method: SW846 3540C	
Prep Date: 18-JUL-14	Prep Aliquot: 1.62 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2880	pg/g	19.4	34.4
40321-76-4	1,2,3,7,8-PeCDD		788	pg/g	10.5	172
39227-28-6	1,2,3,4,7,8-HxCDD		728	pg/g	19.7	172
57653-85-7	1,2,3,6,7,8-HxCDD		778	pg/g	20.0	172
19408-74-3	1,2,3,7,8,9-HxCDD		707	pg/g	21.1	172
35822-46-9	1,2,3,4,6,7,8-HpCDD		1180	pg/g	28.0	172
3268-87-9	1,2,3,4,6,7,8,9-OCDD		11500	pg/g	90.0	344
51207-31-9	2,3,7,8-TCDF		174	pg/g	13.7	34.4
57117-41-6	1,2,3,7,8-PeCDF		764	pg/g	15.3	172
57117-31-4	2,3,4,7,8-PeCDF		734	pg/g	14.3	172
70648-26-9	1,2,3,4,7,8-HxCDF		803	pg/g	28.8	172
57117-44-9	1,2,3,6,7,8-HxCDF		794	pg/g	28.5	172
60851-34-5	2,3,4,6,7,8-HxCDF		812	pg/g	30.3	172
72918-21-9	1,2,3,7,8,9-HxCDF		864	pg/g	42.0	172
67562-39-4	1,2,3,4,6,7,8-HpCDF		908	pg/g	20.0	172
55673-89-7	1,2,3,4,7,8,9-HpCDF		819	pg/g	39.0	172
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1830	pg/g	47.0	344

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1250	1380	pg/g	90.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1140	1380	pg/g	83.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1200	1380	pg/g	86.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1220	1380	pg/g	88.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1400	1380	pg/g	101	(23%-140%)
13C-OCDD		2390	2760	pg/g	86.9	(17%-157%)
13C-2,3,7,8-TCDF		1300	1380	pg/g	94.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1190	1380	pg/g	86.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1280	1380	pg/g	93.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1260	1380	pg/g	91.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1380	1380	pg/g	100	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1310	1380	pg/g	94.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1210	1380	pg/g	88.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1330	1380	pg/g	96.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1290	1380	pg/g	93.4	(26%-138%)
37Cl-2,3,7,8-TCDD		155	138	pg/g	113	(35%-197%)

Comments:



August 05, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6398

Dear Mr. Kinroth:

Cape Fear Analytical, LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 24, 2014. This revised data report has been prepared and reviewed in accordance with CFA's standard operating procedures. Refer to the fractional case narrative for revision details.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (910) 795-0421.

Sincerely,

Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #: _____
 CFA Quote #: _____
 COC Number ⁽¹⁾: _____
 PO Number: _____

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

CFA Work Order Number: 6398

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Phone #: 913-908-4649

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Stratford Forest Removal Action Fax #: _____
 Address: 20 Jamestown Farm DR Florissant, Mo 63034
 Collected by: R Clayton Send Results To: John Kiarth@charter.net
relay@tetra-tech.com

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers	Sample Analysis Requested ⁽⁵⁾										Preservative Type (6)	Comments Note: extra sample is required for sample specific QC	
							1	2	3	4	5	6	7	8	9	10			
<u>SFRA-160</u>	<u>7-23-14</u>	<u>1620</u>			<u>S</u>	<u>1</u>	<u>4</u>												
<u>SFRA-161</u>	<u>7-23-14</u>	<u>1630</u>			<u>S</u>	<u>1</u>	<u>1</u>												

TAT Requested: Normal: _____ Rush: X Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Sample Collection Time/Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time
<u>R. Clayton</u>	<u>7-23-14</u>	<u>1658</u>
<u>Cynde Jenkins</u>	<u>24 JUL 14</u>	<u>0950</u>

Sample Shipping and Delivery Details

CFA PM: Cynde Jenkins
 Method of Shipment: Fed EX Date Shipped: 7-23-14
 Airbill #: 8060 2691 5979
 Airbill #: _____

1.) Chain of Custody Number = Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or- N - for sample was not field filtered.
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only

Custody Seal Intact?
 YES (NO)

Cooler Temp:
51.7°C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6398**

Revision 1

This revised report includes the confirmation data for the associated MS/MSD, which was not included in the original report. The sample results originally reported have not changed.

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26528
Clean Up Batch Number: 26527
Extraction Batch Number: 26526

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6398001	SFRA-160
6398002	SFRA-161
12011028	Method Blank (MB)
12011029	Laboratory Control Sample (LCS)
12011030	Laboratory Control Sample Duplicate (LCSD)
12011031	6398001(SFRA-160) Matrix Spike (MS)
12011032	6398001(SFRA-160) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6398001 (SFRA-160) - Batch 26528 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

Two MS recoveries for this SDG were not within the acceptance limits. The failures can be attributed to matrix interference. 12011031 (SFRA-160) - Batch 26528.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Miscellaneous Information**Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6398 CFA Work Order: 6398


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 05 AUG 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 6398001	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/28/2014 16:07	Analyst: JTF	Instrument: HRP750
Data File: A28JUL14A-4		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		14.5	pg/g	1.15	8.87

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 6398001	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 20:16	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-4		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2360	pg/g	6.30	8.87
40321-76-4	1,2,3,7,8-PeCDD	U	3.03	pg/g	3.03	44.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	7.4	pg/g	7.40	44.3
57653-85-7	1,2,3,6,7,8-HxCDD	J	14.2	pg/g	6.47	44.3
19408-74-3	1,2,3,7,8,9-HxCDD	U	7.24	pg/g	7.24	44.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		291	pg/g	16.2	44.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8300	pg/g	50.6	88.7
51207-31-9	2,3,7,8-TCDF		16.5	pg/g	4.79	8.87
57117-41-6	1,2,3,7,8-PeCDF	U	2.31	pg/g	2.31	44.3
57117-31-4	2,3,4,7,8-PeCDF	J	3.02	pg/g	2.09	44.3
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.00	pg/g	4.45	44.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	4.06	pg/g	4.06	44.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	4.49	pg/g	4.49	44.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	7.34	pg/g	7.34	44.3
67562-39-4	1,2,3,4,6,7,8-HpCDF		59.6	pg/g	7.56	44.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	15.3	pg/g	15.3	44.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	76.3	pg/g	13.7	88.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1150	1770	pg/g	64.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1210	1770	pg/g	68.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		942	1770	pg/g	53.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1160	1770	pg/g	65.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1080	1770	pg/g	60.7	(23%-140%)
13C-OCDD		1930	3550	pg/g	54.4	(17%-157%)
13C-2,3,7,8-TCDF		1240	1770	pg/g	69.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1190	1770	pg/g	67.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1300	1770	pg/g	73.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1020	1770	pg/g	57.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1270	1770	pg/g	71.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1190	1770	pg/g	67.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1070	1770	pg/g	60.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1120	1770	pg/g	63.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1050	1770	pg/g	59.4	(26%-138%)
37Cl-2,3,7,8-TCDD		187	177	pg/g	105	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 6398002	Date Collected: 07/23/2014 16:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/24/2014 09:50	%Moisture: 5.2
Client ID: SFRA-161		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 22:39	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-7		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.09 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		340	pg/g	3.66	9.68
40321-76-4	1,2,3,7,8-PeCDD	U	2.05	pg/g	2.05	48.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.67	pg/g	5.67	48.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	9.51	pg/g	5.30	48.4
19408-74-3	1,2,3,7,8,9-HxCDD	U	5.79	pg/g	5.79	48.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		267	pg/g	12.4	48.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5920	pg/g	46.1	96.8
51207-31-9	2,3,7,8-TCDF	J	6.20	pg/g	3.25	9.68
57117-41-6	1,2,3,7,8-PeCDF	U	2.13	pg/g	2.13	48.4
57117-31-4	2,3,4,7,8-PeCDF	U	1.93	pg/g	1.93	48.4
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.79	pg/g	2.63	48.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.36	pg/g	2.36	48.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.37	pg/g	3.37	48.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.32	pg/g	4.32	48.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	45.9	pg/g	4.30	48.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	8	pg/g	8.00	48.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		114	pg/g	15.7	96.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1650	1940	pg/g	85.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1720	1940	pg/g	89.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1400	1940	pg/g	72.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1650	1940	pg/g	85.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1620	1940	pg/g	83.9	(23%-140%)
13C-OCDD		3000	3870	pg/g	77.4	(17%-157%)
13C-2,3,7,8-TCDF		1780	1940	pg/g	92.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1670	1940	pg/g	86.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1780	1940	pg/g	92.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1500	1940	pg/g	77.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1790	1940	pg/g	92.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1670	1940	pg/g	86.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1590	1940	pg/g	82.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1710	1940	pg/g	88.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1550	1940	pg/g	80.0	(26%-138%)
37Cl-2,3,7,8-TCDD		192	194	pg/g	99.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6398

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12011029	LCS for batch 26526	13C-2,3,7,8-TCDD		59.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		53.2	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		43.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		53.9	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		42.7	(22%-166%)
		13C-OCDD		27.9	(13%-199%)
		13C-2,3,7,8-TCDF		66.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		54.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		57.8	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		50.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		57.3	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		53.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		44.5	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		48.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		35.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		99.5	(31%-191%)
12011030	LCSD for batch 26526	13C-2,3,7,8-TCDD		85.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		87.7	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		71.6	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		91.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.1	(22%-166%)
		13C-OCDD		71.8	(13%-199%)
		13C-2,3,7,8-TCDF		92.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		84.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		94.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		98.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		91.6	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		82.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		88.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		78.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		91.0	(31%-191%)
12011028	MB for batch 26526	13C-2,3,7,8-TCDD		86.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		67.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.8	(23%-140%)
		13C-OCDD		63.8	(17%-157%)
		13C-2,3,7,8-TCDF		94.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		93.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		75.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		93.6	(35%-197%)
6398001	SFRA-160	13C-2,3,7,8-TCDD		64.6	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6398

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6398001	SFRA-160	13C-1,2,3,7,8-PeCDD		68.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		53.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		65.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		60.7	(23%-140%)
		13C-OCDD		54.4	(17%-157%)
		13C-2,3,7,8-TCDF		69.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		67.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		73.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		57.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		71.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		67.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		60.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		63.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		59.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		105	(35%-197%)
12011031	SFRA-160(6398001MS)	13C-2,3,7,8-TCDD		85.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		92.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.5	(23%-140%)
		13C-OCDD		83.9	(17%-157%)
		13C-2,3,7,8-TCDF		91.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		96.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		96.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.5	(26%-138%)
37Cl-2,3,7,8-TCDD		104	(35%-197%)		
12011032	SFRA-160(6398001MSD)	13C-2,3,7,8-TCDD		91.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		95.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		90.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.9	(23%-140%)
		13C-OCDD		85.8	(17%-157%)
		13C-2,3,7,8-TCDF		94.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		103	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		84.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		98.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		91.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		98.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.3	(26%-138%)
37Cl-2,3,7,8-TCDD		108	(35%-197%)		
6398002	SFRA-161	13C-2,3,7,8-TCDD		85.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.0	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6398

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6398002	SFRA-161	13C-1,2,3,4,7,8-HxCDD		72.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.9	(23%-140%)
		13C-OCDD		77.4	(17%-157%)
		13C-2,3,7,8-TCDF		92.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		80.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		99.3	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26526

Matrix: SOLID

Lab Sample ID: 12011029

Instrument: HRP763

Analysis Date: 07/26/2014 17:53

Dilution: 1

Analyst: JTF

Prep Batch ID: 26526

Batch ID: 26528

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.7	103	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	98.8	98.8	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	103	103	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	94.3	94.3	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	102	102	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	95.0	95	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	192	96	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	20.5	102	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	108	108	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	111	111	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	116	116	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	115	115	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	113	113	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	115	115	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	108	108	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	120	120	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	222	111	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26526

Matrix: SOLID

Lab Sample ID: 12011030

Instrument: HRP763

Analysis Date: 07/26/2014 18:40

Dilution: 1

Analyst: JTF

Prep Batch ID: 26526

Batch ID: 26528

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.3	101	67-158	1.89	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	103	103	70-142	4.12	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	98.8	98.8	70-164	3.76	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	102	102	76-134	7.60	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	108	108	64-162	5.11	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140	6.12	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	189	94.5	78-144	1.49	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	21.3	106	75-158	3.85	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	109	109	80-134	0.665	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	107	107	68-160	3.72	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	114	114	72-134	1.53	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	114	114	84-130	1.12	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	110	110	70-156	2.44	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	119	119	78-130	3.29	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	115	115	82-122	6.76	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	115	115	78-138	4.24	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	233	116	63-170	4.80	0-20

**Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report**

SDG Number: 6398	Sample Type: Matrix Spike	
Client ID: SFRA-160(6398001MS)	Matrix: SOLID	
Lab Sample ID: 12011031	%Moisture: 5.3	
Instrument: HRP750	Analysis Date: 07/29/2014 18:15	Dilution: 1
Analyst: JTF	Prep Batch ID: 26526	
	Batch ID: 26528	

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
51207-31-9	MS 2,3,7,8-TCDF	164	168	93.6	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398
Client ID: SFRA-160(6398001MSD)
Lab Sample ID: 12011032
Instrument: HRP750
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 5.3
Analysis Date: 07/29/2014 18:34 Dilution: 1
Prep Batch ID: 26526
Batch ID: 26528

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
51207-31-9	MSD 2,3,7,8-TCDF	174	181	95.5	70-130	7.70	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398
Client ID: SFRA-160(6398001MS)
Lab Sample ID: 12011031
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 5.3
Analysis Date: 07/26/2014 21:03
Prep Batch ID: 26526
Batch ID: 26528
Dilution: 1

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits
		pg/g		pg/g		
1746-01-6	MS	2,3,7,8-TCDD	164	2150	-132 *	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	818 U	816	99.8	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	818 U	768	93.9	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	818 J	881	106	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	818 U	885	108	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	818	1120	102	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	1640	9320	62 *	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	818 U	898	110	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	818 J	877	107	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	818 J	936	114	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	818 U	923	113	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	818 U	905	111	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	818 U	962	118	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	818	971	111	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	818 U	947	116	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	1640 J	1910	112	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398
Client ID: SFRA-160(6398001MSD)
Lab Sample ID: 12011032
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike Duplicate
Matrix: SOLID
%Moisture: 5.3
Analysis Date: 07/26/2014 21:51
Prep Batch ID: 26526
Batch ID: 26528
Dilution: 1

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	174		2540	102	70-130	16.8	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	872	U	866	99.2	70-130	5.87	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	872	U	858	98.4	70-130	11.1	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	872	J	891	101	70-130	1.10	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	872	U	932	107	70-130	5.12	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	872		1300	116	70-130	14.8	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	1740		9730	81.9	70-130	4.35	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	872	U	933	107	70-130	3.84	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	872	J	903	103	70-130	2.86	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	872	J	1000	114	70-130	6.72	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	872	U	973	112	70-130	5.25	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	872	U	996	114	70-130	9.49	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	872	U	1020	117	70-130	6.01	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	872		1060	115	70-130	8.67	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	872	U	1040	119	70-130	8.91	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	1740	J	2110	117	70-130	9.85	0-20

Method Blank Summary

Page 1 of 1

SDG Number: 6398
Client ID: MB for batch 26526
Lab Sample ID: 12011028
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 24-JUL-14

Matrix: SOLID
Data File: b25jul14a_4-3
Analyzed: 07/26/14 19:28

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26526	12011029	b25jul14a_4-1	07/26/14	1753
02 LCSD for batch 26526	12011030	b25jul14a_4-2	07/26/14	1840
03 SFRA-160	6398001	b25jul14a_4-4	07/26/14	2016
04 SFRA-160(6398001MS)	12011031	b25jul14a_4-5	07/26/14	2103
05 SFRA-160(6398001MSD)	12011032	b25jul14a_4-6	07/26/14	2151
06 SFRA-161	6398002	b25jul14a_4-7	07/26/14	2239
07 SFRA-160	6398001	A28JUL14A-4	07/28/14	1607
08 SFRA-160(6398001MS)	12011031	A29JUL14A-13	07/29/14	1815
09 SFRA-160(6398001MSD)	12011032	A29JUL14A-14	07/29/14	1834

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011028		Matrix: SOLID
Client Sample: QC for batch 26526		
Client ID: MB for batch 26526		Prep Basis: As Received
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 19:28	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-3		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.254	pg/g	0.254	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.149	pg/g	0.149	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.224	pg/g	0.224	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.198	pg/g	0.198	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.22	pg/g	0.220	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.408	pg/g	0.408	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.89	pg/g	0.890	10.0
51207-31-9	2,3,7,8-TCDF	J	0.332	pg/g	0.220	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.14	pg/g	0.140	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.116	pg/g	0.116	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.208	pg/g	0.208	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.195	pg/g	0.195	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.214	pg/g	0.214	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.378	pg/g	0.378	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.246	pg/g	0.246	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.484	pg/g	0.484	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.1	pg/g	1.10	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		172	200	pg/g	86.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		174	200	pg/g	87.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		135	200	pg/g	67.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		178	200	pg/g	89.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		160	200	pg/g	79.8	(23%-140%)
13C-OCDD		255	400	pg/g	63.8	(17%-157%)
13C-2,3,7,8-TCDF		189	200	pg/g	94.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		174	200	pg/g	87.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		190	200	pg/g	94.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		164	200	pg/g	81.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		187	200	pg/g	93.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		176	200	pg/g	88.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		169	200	pg/g	84.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		152	200	pg/g	75.8	(26%-138%)
37Cl-2,3,7,8-TCDD		18.7	20.0	pg/g	93.6	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011029		Matrix: SOLID
Client Sample: QC for batch 26526		
Client ID: LCS for batch 26526		Prep Basis: As Received
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 17:53	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-1		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.7	pg/g	0.468	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.8	pg/g	0.712	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		103	pg/g	1.99	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		94.3	pg/g	1.75	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	1.96	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.0	pg/g	3.00	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	4.50	10.0
51207-31-9	2,3,7,8-TCDF		20.5	pg/g	0.380	1.00
57117-41-6	1,2,3,7,8-PeCDF		108	pg/g	0.896	5.00
57117-31-4	2,3,4,7,8-PeCDF		111	pg/g	0.790	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		116	pg/g	2.00	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		115	pg/g	1.83	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		113	pg/g	2.12	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		115	pg/g	4.00	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		108	pg/g	1.77	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		120	pg/g	3.68	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		222	pg/g	6.94	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		119	200	pg/g	59.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		106	200	pg/g	53.2	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		86.5	200	pg/g	43.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		108	200	pg/g	53.9	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		85.5	200	pg/g	42.7	(22%-166%)
13C-OCDD		112	400	pg/g	27.9	(13%-199%)
13C-2,3,7,8-TCDF		133	200	pg/g	66.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		108	200	pg/g	54.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		116	200	pg/g	57.8	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		100	200	pg/g	50.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		115	200	pg/g	57.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		107	200	pg/g	53.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		89.0	200	pg/g	44.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		96.3	200	pg/g	48.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		70.3	200	pg/g	35.1	(20%-186%)
37Cl-2,3,7,8-TCDD		19.9	20.0	pg/g	99.5	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011030		Matrix: SOLID
Client Sample: QC for batch 26526		
Client ID: LCSD for batch 26526		Prep Basis: As Received
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 18:40	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-2		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.374	1.00
40321-76-4	1,2,3,7,8-PeCDD		103	pg/g	0.452	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.8	pg/g	1.15	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	1.04	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		108	pg/g	1.15	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	1.78	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		189	pg/g	2.64	10.0
51207-31-9	2,3,7,8-TCDF		21.3	pg/g	0.286	1.00
57117-41-6	1,2,3,7,8-PeCDF		109	pg/g	0.512	5.00
57117-31-4	2,3,4,7,8-PeCDF		107	pg/g	0.444	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		114	pg/g	1.24	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		114	pg/g	1.08	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		110	pg/g	1.25	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		119	pg/g	2.10	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		115	pg/g	1.16	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		115	pg/g	2.24	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		233	pg/g	3.20	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		172	200	pg/g	85.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		175	200	pg/g	87.7	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		143	200	pg/g	71.6	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		183	200	pg/g	91.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.1	(22%-166%)
13C-OCDD		287	400	pg/g	71.8	(13%-199%)
13C-2,3,7,8-TCDF		186	200	pg/g	92.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		169	200	pg/g	84.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		189	200	pg/g	94.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		154	200	pg/g	77.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		198	200	pg/g	98.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		183	200	pg/g	91.6	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		165	200	pg/g	82.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		176	200	pg/g	88.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		157	200	pg/g	78.5	(20%-186%)
37Cl-2,3,7,8-TCDD		18.2	20.0	pg/g	91.0	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011031	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: QC for batch 26526	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160(6398001MS)		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/29/2014 18:15	Analyst: JTF	Instrument: HRP750
Data File: A29JUL14A-13		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.29 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		168	pg/g	3.40	8.18

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011031	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: QC for batch 26526	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160(6398001MS)		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 21:03	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-5		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.29 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2150	pg/g	5.63	8.18
40321-76-4	1,2,3,7,8-PeCDD		816	pg/g	5.60	40.9
39227-28-6	1,2,3,4,7,8-HxCDD		768	pg/g	9.15	40.9
57653-85-7	1,2,3,6,7,8-HxCDD		881	pg/g	9.11	40.9
19408-74-3	1,2,3,7,8,9-HxCDD		885	pg/g	9.67	40.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		1120	pg/g	15.3	40.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9320	pg/g	43.4	81.8
57117-41-6	1,2,3,7,8-PeCDF		898	pg/g	5.01	40.9
57117-31-4	2,3,4,7,8-PeCDF		877	pg/g	4.16	40.9
70648-26-9	1,2,3,4,7,8-HxCDF		936	pg/g	13.3	40.9
57117-44-9	1,2,3,6,7,8-HxCDF		923	pg/g	11.3	40.9
60851-34-5	2,3,4,6,7,8-HxCDF		905	pg/g	13.5	40.9
72918-21-9	1,2,3,7,8,9-HxCDF		962	pg/g	22.6	40.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		971	pg/g	11.3	40.9
55673-89-7	1,2,3,4,7,8,9-HpCDF		947	pg/g	19.1	40.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1910	pg/g	37.0	81.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1400	1640	pg/g	85.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1510	1640	pg/g	92.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1270	1640	pg/g	77.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1450	1640	pg/g	88.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1430	1640	pg/g	87.5	(23%-140%)
13C-OCDD		2750	3270	pg/g	83.9	(17%-157%)
13C-2,3,7,8-TCDF		1500	1640	pg/g	91.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1430	1640	pg/g	87.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1580	1640	pg/g	96.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1320	1640	pg/g	80.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1570	1640	pg/g	96.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1480	1640	pg/g	90.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1380	1640	pg/g	84.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1500	1640	pg/g	91.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1400	1640	pg/g	85.5	(26%-138%)
37Cl-2,3,7,8-TCDD		171	164	pg/g	104	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011032	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: QC for batch 26526	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160(6398001MSD)		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/29/2014 18:34	Analyst: JTF	Instrument: HRP750
Data File: A29JUL14A-14		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.21 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		181	pg/g	3.84	8.72

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011032	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: QC for batch 26526	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160(6398001MSD)		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 21:51	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-6		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.21 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2540	pg/g	7.10	8.72
40321-76-4	1,2,3,7,8-PeCDD		866	pg/g	5.81	43.6
39227-28-6	1,2,3,4,7,8-HxCDD		858	pg/g	8.93	43.6
57653-85-7	1,2,3,6,7,8-HxCDD		891	pg/g	8.83	43.6
19408-74-3	1,2,3,7,8,9-HxCDD		932	pg/g	9.39	43.6
35822-46-9	1,2,3,4,6,7,8-HpCDD		1300	pg/g	16.3	43.6
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9730	pg/g	50.9	87.2
57117-41-6	1,2,3,7,8-PeCDF		933	pg/g	4.54	43.6
57117-31-4	2,3,4,7,8-PeCDF		903	pg/g	4.01	43.6
70648-26-9	1,2,3,4,7,8-HxCDF		1000	pg/g	13.4	43.6
57117-44-9	1,2,3,6,7,8-HxCDF		973	pg/g	12.0	43.6
60851-34-5	2,3,4,6,7,8-HxCDF		996	pg/g	13.2	43.6
72918-21-9	1,2,3,7,8,9-HxCDF		1020	pg/g	22.2	43.6
67562-39-4	1,2,3,4,6,7,8-HpCDF		1060	pg/g	8.95	43.6
55673-89-7	1,2,3,4,7,8,9-HpCDF		1040	pg/g	19.2	43.6
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2110	pg/g	26.0	87.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1590	1740	pg/g	91.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		1670	1740	pg/g	95.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1410	1740	pg/g	81.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1580	1740	pg/g	90.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1620	1740	pg/g	92.9	(23%-140%)
13C-OCDD		2990	3490	pg/g	85.8	(17%-157%)
13C-2,3,7,8-TCDF		1650	1740	pg/g	94.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1620	1740	pg/g	92.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1800	1740	pg/g	103	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1470	1740	pg/g	84.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1710	1740	pg/g	98.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1600	1740	pg/g	91.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1480	1740	pg/g	84.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1710	1740	pg/g	98.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1490	1740	pg/g	85.3	(26%-138%)
37Cl-2,3,7,8-TCDD		188	174	pg/g	108	(35%-197%)

Comments:

July 29, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6398

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 24, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #: _____
 CFA Quote #: _____
 COC Number ⁽¹⁾: _____
 PO Number: _____

Cape Fear Analytical, LLC
Chain of Custody and Analytical Request

CFA Work Order Number: 6398

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech Phone #: 913-908-4649

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Stratford Forest Removal Action Fax #: _____
 Address: 20 Jamestown Farm DR Abingdon, Mo 63039
 Collected by: R Clayton Send Results To: John Kiarth@charter.net
rcclay@tetratech.com

Total number of containers	Sample Analysis Requested ⁽⁵⁾										Preservative Type (6)	
	1	2	3	4	5	6	7	8	9	10		
4												Comments Note: extra sample is required for sample specific QC
1												
1												

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected <small>(mm-dd-yy)</small>	*Time Collected <small>(Military) (hhmm)</small>	QC Code <small>(2)</small>	Field Filtered <small>(3)</small>	Sample Matrix <small>(4)</small>
<u>SFRA-160</u>	<u>7-23-14</u>	<u>1620</u>			<u>S</u>
<u>SFRA-161</u>	<u>7-23-14</u>	<u>1630</u>			<u>S</u>

TAT Requested: Normal: _____ Rush: X Specify: 72 hr (Subject to Surcharge) Fax Results: Yes / No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures		
Relinquished By (Signed)	Date	Time
<u>Rol Clayton</u>	<u>7-23-14</u>	<u>1658</u>
<u>Cynde Jenkins</u>	<u>24 JUL 14</u>	<u>0950</u>

Sample Shipping and Delivery Details	
CFA PM: <u>Cynde Jenkins</u>	
Method of Shipment: <u>Fed EX</u>	Date Shipped: <u>7-23-14</u>
Airbill #: <u>8060 2691 5779</u>	

- Chain of Custody Number = Client Determined
- QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
- Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
- Sample Analysis Requested: Analytical method requested (i.e. **8290B**, **1668B**) and number of containers provided for each (i.e. **8290B** - 3, **1668B** - 1).
- Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

For Lab Receiving Use Only

Custody Seal Intact?
 YES (NO)

Cooler Temp:
51.7°C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6398
Shipping Company: Fed Ex	Date/Time Received: 24 JUL 14 0950

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			✓
Samples < 2x background?			✓

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	✓			
3 Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other (describe) 5.7°C
4 Aqueous samples found to have visible solids?			✓	Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?			✓	Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?			✓	Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	✓			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	✓			Sample IDs, containers affected:
11 COC form is properly signed in relinquished/received sections?	✓			

Comments:

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6398**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26528
Clean Up Batch Number: 26527
Extraction Batch Number: 26526

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6398001	SFRA-160
6398002	SFRA-161
12011028	Method Blank (MB)
12011029	Laboratory Control Sample (LCS)
12011030	Laboratory Control Sample Duplicate (LCSD)
12011031	6398001(SFRA-160) Matrix Spike (MS)
12011032	6398001(SFRA-160) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 6398001 (SFRA-160) - Batch 26528 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

Two MS recoveries for this SDG were not within the acceptance limits. The failures can be attributed to matrix interference. 12011031 (SFRA-160) - Batch 26528.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present.

Miscellaneous Information**Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6398 CFA Work Order: 6398


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 29 JUL 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 6398001	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/28/2014 16:07	Analyst: JTF	Instrument: HRP750
Data File: A28JUL14A-4		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		14.5	pg/g	1.15	8.87

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

- J Value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 6398001	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 20:16	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-4		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.19 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2360	pg/g	6.30	8.87
40321-76-4	1,2,3,7,8-PeCDD	U	3.03	pg/g	3.03	44.3
39227-28-6	1,2,3,4,7,8-HxCDD	U	7.4	pg/g	7.40	44.3
57653-85-7	1,2,3,6,7,8-HxCDD	J	14.2	pg/g	6.47	44.3
19408-74-3	1,2,3,7,8,9-HxCDD	U	7.24	pg/g	7.24	44.3
35822-46-9	1,2,3,4,6,7,8-HpCDD		291	pg/g	16.2	44.3
3268-87-9	1,2,3,4,6,7,8,9-OCDD		8300	pg/g	50.6	88.7
51207-31-9	2,3,7,8-TCDF		16.5	pg/g	4.79	8.87
57117-41-6	1,2,3,7,8-PeCDF	U	2.31	pg/g	2.31	44.3
57117-31-4	2,3,4,7,8-PeCDF	J	3.02	pg/g	2.09	44.3
70648-26-9	1,2,3,4,7,8-HxCDF	J	6.00	pg/g	4.45	44.3
57117-44-9	1,2,3,6,7,8-HxCDF	U	4.06	pg/g	4.06	44.3
60851-34-5	2,3,4,6,7,8-HxCDF	U	4.49	pg/g	4.49	44.3
72918-21-9	1,2,3,7,8,9-HxCDF	U	7.34	pg/g	7.34	44.3
67562-39-4	1,2,3,4,6,7,8-HpCDF		59.6	pg/g	7.56	44.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	15.3	pg/g	15.3	44.3
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	76.3	pg/g	13.7	88.7

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1150	1770	pg/g	64.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1210	1770	pg/g	68.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		942	1770	pg/g	53.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1160	1770	pg/g	65.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1080	1770	pg/g	60.7	(23%-140%)
13C-OCDD		1930	3550	pg/g	54.4	(17%-157%)
13C-2,3,7,8-TCDF		1240	1770	pg/g	69.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1190	1770	pg/g	67.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1300	1770	pg/g	73.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1020	1770	pg/g	57.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1270	1770	pg/g	71.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1190	1770	pg/g	67.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1070	1770	pg/g	60.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1120	1770	pg/g	63.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1050	1770	pg/g	59.4	(26%-138%)
37Cl-2,3,7,8-TCDD		187	177	pg/g	105	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 6398002	Date Collected: 07/23/2014 16:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/24/2014 09:50	%Moisture: 5.2
Client ID: SFRA-161		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 22:39	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-7		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.09 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		340	pg/g	3.66	9.68
40321-76-4	1,2,3,7,8-PeCDD	U	2.05	pg/g	2.05	48.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	5.67	pg/g	5.67	48.4
57653-85-7	1,2,3,6,7,8-HxCDD	J	9.51	pg/g	5.30	48.4
19408-74-3	1,2,3,7,8,9-HxCDD	U	5.79	pg/g	5.79	48.4
35822-46-9	1,2,3,4,6,7,8-HpCDD		267	pg/g	12.4	48.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD		5920	pg/g	46.1	96.8
51207-31-9	2,3,7,8-TCDF	J	6.20	pg/g	3.25	9.68
57117-41-6	1,2,3,7,8-PeCDF	U	2.13	pg/g	2.13	48.4
57117-31-4	2,3,4,7,8-PeCDF	U	1.93	pg/g	1.93	48.4
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.79	pg/g	2.63	48.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	2.36	pg/g	2.36	48.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	3.37	pg/g	3.37	48.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	4.32	pg/g	4.32	48.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	45.9	pg/g	4.30	48.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	8	pg/g	8.00	48.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF		114	pg/g	15.7	96.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1650	1940	pg/g	85.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1720	1940	pg/g	89.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1400	1940	pg/g	72.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1650	1940	pg/g	85.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1620	1940	pg/g	83.9	(23%-140%)
13C-OCDD		3000	3870	pg/g	77.4	(17%-157%)
13C-2,3,7,8-TCDF		1780	1940	pg/g	92.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1670	1940	pg/g	86.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1780	1940	pg/g	92.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1500	1940	pg/g	77.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1790	1940	pg/g	92.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1670	1940	pg/g	86.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1590	1940	pg/g	82.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1710	1940	pg/g	88.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1550	1940	pg/g	80.0	(26%-138%)
37Cl-2,3,7,8-TCDD		192	194	pg/g	99.3	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6398

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12011029	LCS for batch 26526	13C-2,3,7,8-TCDD		59.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		53.2	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		43.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		53.9	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		42.7	(22%-166%)
		13C-OCDD		27.9	(13%-199%)
		13C-2,3,7,8-TCDF		66.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		54.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		57.8	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		50.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		57.3	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		53.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		44.5	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		48.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		35.1	(20%-186%)
		37Cl-2,3,7,8-TCDD		99.5	(31%-191%)
12011030	LCSD for batch 26526	13C-2,3,7,8-TCDD		85.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		87.7	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		71.6	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		91.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.1	(22%-166%)
		13C-OCDD		71.8	(13%-199%)
		13C-2,3,7,8-TCDF		92.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		84.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		94.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.1	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		98.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		91.6	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		82.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		88.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		78.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		91.0	(31%-191%)
12011028	MB for batch 26526	13C-2,3,7,8-TCDD		86.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		67.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		89.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		79.8	(23%-140%)
		13C-OCDD		63.8	(17%-157%)
		13C-2,3,7,8-TCDF		94.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		93.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		75.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		93.6	(35%-197%)
6398001	SFRA-160	13C-2,3,7,8-TCDD		64.6	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6398

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6398001	SFRA-160	13C-1,2,3,7,8-PeCDD		68.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		53.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		65.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		60.7	(23%-140%)
		13C-OCDD		54.4	(17%-157%)
		13C-2,3,7,8-TCDF		69.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		67.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		73.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		57.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		71.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		67.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		60.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		63.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		59.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		105	(35%-197%)
12011031	SFRA-160(6398001MS)	13C-2,3,7,8-TCDD		85.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		92.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.5	(23%-140%)
		13C-OCDD		83.9	(17%-157%)
		13C-2,3,7,8-TCDF		91.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		96.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		96.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		90.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		91.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.5	(26%-138%)
37Cl-2,3,7,8-TCDD		104	(35%-197%)		
12011032	SFRA-160(6398001MSD)	13C-2,3,7,8-TCDD		91.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		95.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		90.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.9	(23%-140%)
		13C-OCDD		85.8	(17%-157%)
		13C-2,3,7,8-TCDF		94.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		103	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		84.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		98.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		91.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		98.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.3	(26%-138%)
37Cl-2,3,7,8-TCDD		108	(35%-197%)		
6398002	SFRA-161	13C-2,3,7,8-TCDD		85.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.0	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6398

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6398002	SFRA-161	13C-1,2,3,4,7,8-HxCDD		72.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.9	(23%-140%)
		13C-OCDD		77.4	(17%-157%)
		13C-2,3,7,8-TCDF		92.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		92.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		86.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		88.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		80.0	(26%-138%)
		37Cl-2,3,7,8-TCDD		99.3	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26526

Matrix: SOLID

Lab Sample ID: 12011029

Instrument: HRP763

Analysis Date: 07/26/2014 17:53

Dilution: 1

Analyst: JTF

Prep Batch ID: 26526

Batch ID: 26528

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.7	103	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	98.8	98.8	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	103	103	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	94.3	94.3	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	102	102	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	95.0	95	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	192	96	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	20.5	102	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	108	108	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	111	111	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	116	116	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	115	115	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	113	113	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	115	115	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	108	108	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	120	120	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	222	111	63-170

**Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report**

SDG Number: 6398

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26526

Matrix: SOLID

Lab Sample ID: 12011030

Instrument: HRP763

Analysis Date: 07/26/2014 18:40

Dilution: 1

Analyst: JTF

Prep Batch ID:26526

Batch ID: 26528

CAS No.	Parmname	Amount	Spike	Recovery	Acceptance	RPD	Acceptance
		Added	Conc.		Limits	%	Limits
		pg/g	pg/g	%			
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.3	101	67-158	1.89	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	103	103	70-142	4.12	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	98.8	98.8	70-164	3.76	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	102	102	76-134	7.60	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	108	108	64-162	5.11	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	101	101	70-140	6.12	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	189	94.5	78-144	1.49	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	21.3	106	75-158	3.85	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	109	109	80-134	0.665	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	107	107	68-160	3.72	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	114	114	72-134	1.53	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	114	114	84-130	1.12	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	110	110	70-156	2.44	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	119	119	78-130	3.29	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	115	115	82-122	6.76	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	115	115	78-138	4.24	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	233	116	63-170	4.80	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398
Client ID: SFRA-160(6398001MS)
Lab Sample ID: 12011031
Instrument: HRP763
Analyst: JTF

Sample Type: Matrix Spike
Matrix: SOLID
%Moisture: 5.3
Analysis Date: 07/26/2014 21:03
Prep Batch ID: 26526
Batch ID: 26528
Dilution: 1

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits	
		pg/g		pg/g			
1746-01-6	MS	2,3,7,8-TCDD	164	2150	-132 *	70-130	
40321-76-4	MS	1,2,3,7,8-PeCDD	818	U	816	99.8	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	818	U	768	93.9	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	818	J	881	106	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	818	U	885	108	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	818		1120	102	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	1640		9320	62 *	70-130
51207-31-9	MS	2,3,7,8-TCDF	164		186	103	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	818	U	898	110	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	818	J	877	107	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	818	J	936	114	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	818	U	923	113	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	818	U	905	111	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	818	U	962	118	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	818		971	111	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	818	U	947	116	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	1640	J	1910	112	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6398	Sample Type: Matrix Spike Duplicate
Client ID: SFRA-160(6398001MSD)	Matrix: SOLID
Lab Sample ID: 12011032	%Moisture: 5.3
Instrument: HRP763	Analysis Date: 07/26/2014 21:51
Analyst: JTF	Dilution: 1
	Prep Batch ID: 26526
	Batch ID: 26528

CAS No.	Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD 2,3,7,8-TCDD	174		2540	102	70-130	16.8	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	872	U	866	99.2	70-130	5.87	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	872	U	858	98.4	70-130	11.1	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	872	J	891	101	70-130	1.10	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	872	U	932	107	70-130	5.12	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	872		1300	116	70-130	14.8	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	1740		9730	81.9	70-130	4.35	0-20
51207-31-9	MSD 2,3,7,8-TCDF	174		195	103	70-130	5.08	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	872	U	933	107	70-130	3.84	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	872	J	903	103	70-130	2.86	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	872	J	1000	114	70-130	6.72	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	872	U	973	112	70-130	5.25	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	872	U	996	114	70-130	9.49	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	872	U	1020	117	70-130	6.01	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	872		1060	115	70-130	8.67	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	872	U	1040	119	70-130	8.91	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	1740	J	2110	117	70-130	9.85	0-20

Method Blank Summary

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SDG Number: 6398
Client ID: MB for batch 26526
Lab Sample ID: 12011028
Column:

Client: TETR001
Instrument ID: HRP763
Prep Date: 24-JUL-14

Matrix: SOLID
Data File: b25jul14a_4-3
Analyzed: 07/26/14 19:28

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26526	12011029	b25jul14a_4-1	07/26/14	1753
02 LCSD for batch 26526	12011030	b25jul14a_4-2	07/26/14	1840
03 SFRA-160	6398001	b25jul14a_4-4	07/26/14	2016
04 SFRA-160(6398001MS)	12011031	b25jul14a_4-5	07/26/14	2103
05 SFRA-160(6398001MSD)	12011032	b25jul14a_4-6	07/26/14	2151
06 SFRA-161	6398002	b25jul14a_4-7	07/26/14	2239
07 SFRA-160	6398001	A28JUL14A-4	07/28/14	1607

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011028		Matrix: SOLID
Client Sample: QC for batch 26526		
Client ID: MB for batch 26526		Prep Basis: As Received
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 19:28	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-3		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.254	pg/g	0.254	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.149	pg/g	0.149	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.224	pg/g	0.224	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.198	pg/g	0.198	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.22	pg/g	0.220	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.408	pg/g	0.408	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	.89	pg/g	0.890	10.0
51207-31-9	2,3,7,8-TCDF	J	0.332	pg/g	0.220	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.14	pg/g	0.140	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.116	pg/g	0.116	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.208	pg/g	0.208	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.195	pg/g	0.195	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.214	pg/g	0.214	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	.378	pg/g	0.378	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.246	pg/g	0.246	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.484	pg/g	0.484	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.1	pg/g	1.10	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		172	200	pg/g	86.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		174	200	pg/g	87.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		135	200	pg/g	67.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		178	200	pg/g	89.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		160	200	pg/g	79.8	(23%-140%)
13C-OCDD		255	400	pg/g	63.8	(17%-157%)
13C-2,3,7,8-TCDF		189	200	pg/g	94.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		174	200	pg/g	87.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		190	200	pg/g	94.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		164	200	pg/g	81.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		187	200	pg/g	93.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		176	200	pg/g	88.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		169	200	pg/g	84.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		152	200	pg/g	75.8	(26%-138%)
37Cl-2,3,7,8-TCDD		18.7	20.0	pg/g	93.6	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011029		Matrix: SOLID
Client Sample: QC for batch 26526		
Client ID: LCS for batch 26526		Prep Basis: As Received
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 17:53	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-1		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.7	pg/g	0.468	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.8	pg/g	0.712	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		103	pg/g	1.99	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		94.3	pg/g	1.75	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	1.96	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		95.0	pg/g	3.00	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	4.50	10.0
51207-31-9	2,3,7,8-TCDF		20.5	pg/g	0.380	1.00
57117-41-6	1,2,3,7,8-PeCDF		108	pg/g	0.896	5.00
57117-31-4	2,3,4,7,8-PeCDF		111	pg/g	0.790	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		116	pg/g	2.00	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		115	pg/g	1.83	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		113	pg/g	2.12	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		115	pg/g	4.00	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		108	pg/g	1.77	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		120	pg/g	3.68	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		222	pg/g	6.94	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		119	200	pg/g	59.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		106	200	pg/g	53.2	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		86.5	200	pg/g	43.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		108	200	pg/g	53.9	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		85.5	200	pg/g	42.7	(22%-166%)
13C-OCDD		112	400	pg/g	27.9	(13%-199%)
13C-2,3,7,8-TCDF		133	200	pg/g	66.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		108	200	pg/g	54.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		116	200	pg/g	57.8	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		100	200	pg/g	50.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		115	200	pg/g	57.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		107	200	pg/g	53.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		89.0	200	pg/g	44.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		96.3	200	pg/g	48.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		70.3	200	pg/g	35.1	(20%-186%)
37Cl-2,3,7,8-TCDD		19.9	20.0	pg/g	99.5	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011030		Matrix: SOLID
Client Sample: QC for batch 26526		
Client ID: LCSD for batch 26526		Prep Basis: As Received
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 18:40	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-2		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.374	1.00
40321-76-4	1,2,3,7,8-PeCDD		103	pg/g	0.452	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		98.8	pg/g	1.15	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	1.04	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		108	pg/g	1.15	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	1.78	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		189	pg/g	2.64	10.0
51207-31-9	2,3,7,8-TCDF		21.3	pg/g	0.286	1.00
57117-41-6	1,2,3,7,8-PeCDF		109	pg/g	0.512	5.00
57117-31-4	2,3,4,7,8-PeCDF		107	pg/g	0.444	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		114	pg/g	1.24	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		114	pg/g	1.08	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		110	pg/g	1.25	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		119	pg/g	2.10	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		115	pg/g	1.16	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		115	pg/g	2.24	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		233	pg/g	3.20	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		172	200	pg/g	85.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		175	200	pg/g	87.7	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		143	200	pg/g	71.6	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		183	200	pg/g	91.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.1	(22%-166%)
13C-OCDD		287	400	pg/g	71.8	(13%-199%)
13C-2,3,7,8-TCDF		186	200	pg/g	92.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		169	200	pg/g	84.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		189	200	pg/g	94.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		154	200	pg/g	77.1	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		198	200	pg/g	98.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		183	200	pg/g	91.6	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		165	200	pg/g	82.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		176	200	pg/g	88.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		157	200	pg/g	78.5	(20%-186%)
37Cl-2,3,7,8-TCDD		18.2	20.0	pg/g	91.0	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011031	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: QC for batch 26526	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160(6398001MS)		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 21:03	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-5		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.29 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2150	pg/g	5.63	8.18
40321-76-4	1,2,3,7,8-PeCDD		816	pg/g	5.60	40.9
39227-28-6	1,2,3,4,7,8-HxCDD		768	pg/g	9.15	40.9
57653-85-7	1,2,3,6,7,8-HxCDD		881	pg/g	9.11	40.9
19408-74-3	1,2,3,7,8,9-HxCDD		885	pg/g	9.67	40.9
35822-46-9	1,2,3,4,6,7,8-HpCDD		1120	pg/g	15.3	40.9
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9320	pg/g	43.4	81.8
51207-31-9	2,3,7,8-TCDF		186	pg/g	3.55	8.18
57117-41-6	1,2,3,7,8-PeCDF		898	pg/g	5.01	40.9
57117-31-4	2,3,4,7,8-PeCDF		877	pg/g	4.16	40.9
70648-26-9	1,2,3,4,7,8-HxCDF		936	pg/g	13.3	40.9
57117-44-9	1,2,3,6,7,8-HxCDF		923	pg/g	11.3	40.9
60851-34-5	2,3,4,6,7,8-HxCDF		905	pg/g	13.5	40.9
72918-21-9	1,2,3,7,8,9-HxCDF		962	pg/g	22.6	40.9
67562-39-4	1,2,3,4,6,7,8-HpCDF		971	pg/g	11.3	40.9
55673-89-7	1,2,3,4,7,8,9-HpCDF		947	pg/g	19.1	40.9
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1910	pg/g	37.0	81.8

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1400	1640	pg/g	85.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1510	1640	pg/g	92.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1270	1640	pg/g	77.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1450	1640	pg/g	88.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1430	1640	pg/g	87.5	(23%-140%)
13C-OCDD		2750	3270	pg/g	83.9	(17%-157%)
13C-2,3,7,8-TCDF		1500	1640	pg/g	91.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1430	1640	pg/g	87.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1580	1640	pg/g	96.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1320	1640	pg/g	80.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1570	1640	pg/g	96.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1480	1640	pg/g	90.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1380	1640	pg/g	84.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1500	1640	pg/g	91.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1400	1640	pg/g	85.5	(26%-138%)
37Cl-2,3,7,8-TCDD		171	164	pg/g	104	(35%-197%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6398	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011032	Date Collected: 07/23/2014 16:20	Matrix: SOLID
Client Sample: QC for batch 26526	Date Received: 07/24/2014 09:50	%Moisture: 5.3
Client ID: SFRA-160(6398001MSD)		Prep Basis: Dry Weight
Batch ID: 26528	Method: EPA Method 1613B	
Run Date: 07/26/2014 21:51	Analyst: JTF	Instrument: HRP763
Data File: b25jul14a_4-6		Dilution: 1
Prep Batch: 26526	Prep Method: SW846 3540C	
Prep Date: 24-JUL-14	Prep Aliquot: 1.21 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		2540	pg/g	7.10	8.72
40321-76-4	1,2,3,7,8-PeCDD		866	pg/g	5.81	43.6
39227-28-6	1,2,3,4,7,8-HxCDD		858	pg/g	8.93	43.6
57653-85-7	1,2,3,6,7,8-HxCDD		891	pg/g	8.83	43.6
19408-74-3	1,2,3,7,8,9-HxCDD		932	pg/g	9.39	43.6
35822-46-9	1,2,3,4,6,7,8-HpCDD		1300	pg/g	16.3	43.6
3268-87-9	1,2,3,4,6,7,8,9-OCDD		9730	pg/g	50.9	87.2
51207-31-9	2,3,7,8-TCDF		195	pg/g	4.62	8.72
57117-41-6	1,2,3,7,8-PeCDF		933	pg/g	4.54	43.6
57117-31-4	2,3,4,7,8-PeCDF		903	pg/g	4.01	43.6
70648-26-9	1,2,3,4,7,8-HxCDF		1000	pg/g	13.4	43.6
57117-44-9	1,2,3,6,7,8-HxCDF		973	pg/g	12.0	43.6
60851-34-5	2,3,4,6,7,8-HxCDF		996	pg/g	13.2	43.6
72918-21-9	1,2,3,7,8,9-HxCDF		1020	pg/g	22.2	43.6
67562-39-4	1,2,3,4,6,7,8-HpCDF		1060	pg/g	8.95	43.6
55673-89-7	1,2,3,4,7,8,9-HpCDF		1040	pg/g	19.2	43.6
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2110	pg/g	26.0	87.2

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1590	1740	pg/g	91.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		1670	1740	pg/g	95.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1410	1740	pg/g	81.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1580	1740	pg/g	90.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1620	1740	pg/g	92.9	(23%-140%)
13C-OCDD		2990	3490	pg/g	85.8	(17%-157%)
13C-2,3,7,8-TCDF		1650	1740	pg/g	94.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		1620	1740	pg/g	92.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		1800	1740	pg/g	103	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1470	1740	pg/g	84.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1710	1740	pg/g	98.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1600	1740	pg/g	91.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1480	1740	pg/g	84.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1710	1740	pg/g	98.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1490	1740	pg/g	85.3	(26%-138%)
37Cl-2,3,7,8-TCDD		188	174	pg/g	108	(35%-197%)

Comments:

August 05, 2014

Mr. David Kinroth
Seagull Environmental Technologies, Incorporated
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal Action
Work Order: 6430

Dear Mr. Kinroth:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 31, 2014. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421 Ext. 4485.

Sincerely,



Cynthia Larkins
Project Manager

Purchase Order: 109644
Enclosures

Page: 1 of 1
 Project #: _____
 CFA Quote #: _____
 COC Number ⁽¹⁾: _____
 PO Number: _____

Cape Fear Analytical, LLC

Chain of Custody and Analytical Request

CFA Work Order Number: **60430**

Cape Fear Analytical, LLC
 3306 Kitty Hawk Rd. Suite 120
 Wilmington, NC 28405
 Phone: (910) 795-0421

Client Name: Tetra Tech, Inc. Phone #: 913-908-4649

Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)

Project/Site Name: Stacker Forest Removal Area Fax #: _____
 Address: 20 Jamestown Farm DR.
 Collected by: R Clayton Send Results To: dave.finnor@charter.net
rclayton@scgallenvironetech.com

← Preservative Type (6)

Sample ID <small>* For composites - indicate start and stop date/time</small>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Total number of containers	Sample Analysis Requested (5)										Comments Note: extra sample is required for sample specific QC		
							1	2	3	4	5	6	7	8	9	10			
SFRA-162	7-30-14	0830			S	1													
SFRA-163	7-30-14	0955			S	1													

TAT Requested: Normal: Rush: X Specify: F2hr (Subject to Surcharge) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone
 Eastern Pacific
 Central Other _____
 Mountain

Chain of Custody Signatures				Sample Shipping and Delivery Details	
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<u>R Clayton</u>	<u>7-30-14</u>	<u>1040</u>	<u>Cynde Larkins</u>	<u>7-30-14</u>	<u>0950</u>
1					
2					
3					

CFA PM: Cynde Larkins
 Method of Shipment: Fed Ex Date Shipped: 7-30-14
 Airbill #: 806026915935

1.) Chain of Custody Number = Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered.
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8290B, 1668B) and number of containers provided for each (i.e. 8290B - 3, 1668B - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
 Custody Seal Intact?
 YES NO
 Cooler Temp:
5.3 C

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: TETR	Work Order: 6430
Shipping Company: FedEx	Date/Time Received: 31 JUL 14 0950

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples < 2x background?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Air Witness: _____

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: (ice bags) blue ice dry ice none other(describe) 5.3°
4	Aqueous samples found to have visible solids?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample IDs, containers affected:
11	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Tetra Tech EM Incorporated (TETR)
SDG 6430**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 26580
Clean Up Batch Number: 26579
Extraction Batch Number: 26578

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
6430001	SFRA-162
6430002	SFRA-163
12011085	Method Blank (MB)
12011086	Laboratory Control Sample (LCS)
12011087	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 13.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2003 NELAC Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A sample of similar matrix, not associated with this SDG, was selected for analysis as the matrix spike and matrix spike duplicate. Batch 26580.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

A 5g dry weight was performed per client request and a 1g extraction was performed due to the high levels of target analytes that may be present. Batch 26580.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Manual integrations were required for data files in this SDG.

Sample Preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report for

TETR001 Tetra Tech EM Incorporated
Client SDG: 6430 CFA Work Order: 6430

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Erin Suhrie

Date: 05 AUG 2014

Title: Data Validator

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6430	Client: TETR001	Project: TETR00114
Lab Sample ID: 6430001	Date Collected: 07/30/2014 08:30	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/31/2014 09:50	%Moisture: 10.7
Client ID: SFRA-162		Prep Basis: Dry Weight
Batch ID: 26580	Method: EPA Method 1613B	
Run Date: 08/04/2014 14:22	Analyst: JTF	Instrument: HRP750
Data File: A04AUG14A-5		Dilution: 1
Prep Batch: 26578	Prep Method: SW846 3540C	
Prep Date: 31-JUL-14	Prep Aliquot: 1.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		1110	pg/g	2.36	9.74
40321-76-4	1,2,3,7,8-PeCDD	U	1.66	pg/g	1.66	48.7
39227-28-6	1,2,3,4,7,8-HxCDD	U	3.7	pg/g	3.70	48.7
57653-85-7	1,2,3,6,7,8-HxCDD	J	12.1	pg/g	3.80	48.7
19408-74-3	1,2,3,7,8,9-HxCDD	J	4.87	pg/g	3.99	48.7
35822-46-9	1,2,3,4,6,7,8-HpCDD		249	pg/g	8.06	48.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD		15200	pg/g	21.6	97.4
51207-31-9	2,3,7,8-TCDF	J	9.35	pg/g	3.49	9.74
57117-41-6	1,2,3,7,8-PeCDF	U	1.22	pg/g	1.22	48.7
57117-31-4	2,3,4,7,8-PeCDF	U	1.52	pg/g	1.52	48.7
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.02	pg/g	1.72	48.7
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.75	pg/g	1.75	48.7
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.34	pg/g	1.87	48.7
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.26	pg/g	2.26	48.7
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	44.9	pg/g	1.44	48.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	2.77	pg/g	2.10	48.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	68.9	pg/g	3.06	97.4

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1790	1950	pg/g	91.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		1990	1950	pg/g	102	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1650	1950	pg/g	84.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1600	1950	pg/g	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1930	1950	pg/g	99.2	(23%-140%)
13C-OCDD		4280	3890	pg/g	110	(17%-157%)
13C-2,3,7,8-TCDF		1870	1950	pg/g	96.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		1970	1950	pg/g	101	(24%-185%)
13C-2,3,4,7,8-PeCDF		1990	1950	pg/g	102	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1580	1950	pg/g	81.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1580	1950	pg/g	81.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1590	1950	pg/g	81.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1650	1950	pg/g	84.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1750	1950	pg/g	90.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1870	1950	pg/g	96.2	(26%-138%)
37Cl-2,3,7,8-TCDD		212	195	pg/g	109	(35%-197%)

Comments:

J Value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6430	Client: TETR001	Project: TETR00114
Lab Sample ID: 6430002	Date Collected: 07/30/2014 09:55	Matrix: SOLID
Client Sample: 1613B Soil	Date Received: 07/31/2014 09:50	%Moisture: 13
Client ID: SFRA-163		Prep Basis: Dry Weight
Batch ID: 26580	Method: EPA Method 1613B	
Run Date: 08/04/2014 15:10	Analyst: JTF	Instrument: HRP750
Data File: A04AUG14A-6		Dilution: 1
Prep Batch: 26578	Prep Method: SW846 3540C	
Prep Date: 31-JUL-14	Prep Aliquot: 1.21 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.76	pg/g	0.760	9.49
40321-76-4	1,2,3,7,8-PeCDD	U	.775	pg/g	0.775	47.5
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.29	pg/g	1.29	47.5
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.34	pg/g	1.34	47.5
19408-74-3	1,2,3,7,8,9-HxCDD	J	1.58	pg/g	1.40	47.5
35822-46-9	1,2,3,4,6,7,8-HpCDD		71.4	pg/g	4.82	47.5
3268-87-9	1,2,3,4,6,7,8,9-OCDD		12100	pg/g	8.79	94.9
51207-31-9	2,3,7,8-TCDF	J	2.98	pg/g	0.967	9.49
57117-41-6	1,2,3,7,8-PeCDF	U	.752	pg/g	0.752	47.5
57117-31-4	2,3,4,7,8-PeCDF	U	.737	pg/g	0.737	47.5
70648-26-9	1,2,3,4,7,8-HxCDF	U	.737	pg/g	0.737	47.5
57117-44-9	1,2,3,6,7,8-HxCDF	U	.725	pg/g	0.725	47.5
60851-34-5	2,3,4,6,7,8-HxCDF	U	.758	pg/g	0.758	47.5
72918-21-9	1,2,3,7,8,9-HxCDF	U	.9	pg/g	0.900	47.5
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	2.66	pg/g	1.10	47.5
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.7	pg/g	1.70	47.5
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	8.09	pg/g	1.26	94.9

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1740	1900	pg/g	91.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1870	1900	pg/g	98.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1570	1900	pg/g	82.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1620	1900	pg/g	85.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1830	1900	pg/g	96.2	(23%-140%)
13C-OCDD		3760	3800	pg/g	98.9	(17%-157%)
13C-2,3,7,8-TCDF		1920	1900	pg/g	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		2010	1900	pg/g	106	(24%-185%)
13C-2,3,4,7,8-PeCDF		1990	1900	pg/g	105	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1620	1900	pg/g	85.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1680	1900	pg/g	88.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1670	1900	pg/g	87.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1780	1900	pg/g	93.8	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		1770	1900	pg/g	93.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1860	1900	pg/g	98.0	(26%-138%)
37Cl-2,3,7,8-TCDD		204	190	pg/g	107	(35%-197%)

Comments:**J** Value is estimated**U** Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 6430

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12011086	LCS for batch 26578	13C-2,3,7,8-TCDD		82.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		96.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		77.8	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		81.1	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		85.7	(22%-166%)
		13C-OCDD		84.3	(13%-199%)
		13C-2,3,7,8-TCDF		91.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		99.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		99.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		79.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		82.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		81.7	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		84.5	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		87.5	(20%-186%)
		37Cl-2,3,7,8-TCDD		100	(31%-191%)
		12011087	LCSD for batch 26578	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				95.0	(21%-227%)
13C-1,2,3,4,7,8-HxCDD				81.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD				79.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD				90.3	(22%-166%)
13C-OCDD				89.0	(13%-199%)
13C-2,3,7,8-TCDF				98.9	(22%-152%)
13C-1,2,3,7,8-PeCDF				100	(21%-192%)
13C-2,3,4,7,8-PeCDF				103	(13%-328%)
13C-1,2,3,4,7,8-HxCDF				83.5	(19%-202%)
13C-1,2,3,6,7,8-HxCDF				82.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF				84.8	(22%-176%)
13C-1,2,3,7,8,9-HxCDF				86.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF				87.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF				93.4	(20%-186%)
37Cl-2,3,7,8-TCDD				104	(31%-191%)
12011085	MB for batch 26578			13C-2,3,7,8-TCDD	
		13C-1,2,3,7,8-PeCDD		108	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		88.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		104	(23%-140%)
		13C-OCDD		104	(17%-157%)
		13C-2,3,7,8-TCDF		101	(24%-169%)
		13C-1,2,3,7,8-PeCDF		109	(24%-185%)
		13C-2,3,4,7,8-PeCDF		110	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		82.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.7	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		88.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		92.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		102	(26%-138%)
		37Cl-2,3,7,8-TCDD		109	(35%-197%)
		6430001	SFRA-162	13C-2,3,7,8-TCDD	

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: 6430

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
6430001	SFRA-162	13C-1,2,3,7,8-PeCDD		102	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		99.2	(23%-140%)
		13C-OCDD		110	(17%-157%)
		13C-2,3,7,8-TCDF		96.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		101	(24%-185%)
		13C-2,3,4,7,8-PeCDF		102	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		90.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		96.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		109	(35%-197%)
6430002	SFRA-163	13C-2,3,7,8-TCDD		91.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		98.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		96.2	(23%-140%)
		13C-OCDD		98.9	(17%-157%)
		13C-2,3,7,8-TCDF		101	(24%-169%)
		13C-1,2,3,7,8-PeCDF		106	(24%-185%)
		13C-2,3,4,7,8-PeCDF		105	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		93.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		93.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		98.0	(26%-138%)
37Cl-2,3,7,8-TCDD		107	(35%-197%)		

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6430

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 26578

Matrix: SOLID

Lab Sample ID: 12011086

Instrument: HRP750

Analysis Date: 08/04/2014 11:57

Dilution: 1

Analyst: JTF

Prep Batch ID: 26578

Batch ID: 26580

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	21.7	108	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	105	105	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	107	107	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	97.8	97.8	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	108	108	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	104	104	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	207	104	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	19.9	99.4	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	98.5	98.5	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	100	100	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	102	102	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	105	105	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	103	103	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	109	109	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	105	105	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	103	103	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	210	105	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: 6430

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 26578

Matrix: SOLID

Lab Sample ID: 12011087

Instrument: HRP750

Analysis Date: 08/04/2014 12:44

Dilution: 1

Analyst: JTF

Prep Batch ID: 26578

Batch ID: 26580

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	22.3	111	67-158	2.79	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	106	106	70-142	0.569	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	105	105	70-164	1.75	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	104	104	76-134	6.62	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	115	115	64-162	5.92	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	104	104	70-140	0.804	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	206	103	78-144	0.689	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	20.2	101	75-158	1.57	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	101	101	80-134	2.06	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	103	103	68-160	2.75	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	103	103	72-134	1.73	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	110	110	84-130	4.22	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	105	105	70-156	2.18	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	108	108	78-130	1.04	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	105	105	82-122	0.080	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	103	103	78-138	0.00777	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	208	104	63-170	0.760	0-20

Method Blank Summary

SDG Number: 6430 Client: TETR001 Matrix: SOLID
Client ID: MB for batch 26578 Instrument ID: HRP750 Data File: A04AUG14A-4
Lab Sample ID: 12011085 Prep Date: 31-JUL-14 Analyzed: 08/04/14 13:33
Column:

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 26578	12011086	A04AUG14A-2	08/04/14	1157
02 LCSD for batch 26578	12011087	A04AUG14A-3	08/04/14	1244
03 SFRA-162	6430001	A04AUG14A-5	08/04/14	1422
04 SFRA-163	6430002	A04AUG14A-6	08/04/14	1510

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6430	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011085		Matrix: SOLID
Client Sample: QC for batch 26578		
Client ID: MB for batch 26578		Prep Basis: As Received
Batch ID: 26580	Method: EPA Method 1613B	
Run Date: 08/04/2014 13:33	Analyst: JTF	Instrument: HRP750
Data File: A04AUG14A-4		Dilution: 1
Prep Batch: 26578	Prep Method: SW846 3540C	
Prep Date: 31-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	.0916	pg/g	0.0916	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	.0776	pg/g	0.0776	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	.105	pg/g	0.105	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	.101	pg/g	0.101	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	.109	pg/g	0.109	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	.173	pg/g	0.173	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.916	pg/g	0.226	10.0
51207-31-9	2,3,7,8-TCDF	J	0.220	pg/g	0.152	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	.0688	pg/g	0.0688	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	.0678	pg/g	0.0678	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	.0558	pg/g	0.0558	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	.057	pg/g	0.057	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	.0548	pg/g	0.0548	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.110	pg/g	0.077	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	.0688	pg/g	0.0688	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	.0982	pg/g	0.0982	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	.24	pg/g	0.240	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		194	200	pg/g	96.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		216	200	pg/g	108	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		177	200	pg/g	88.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		172	200	pg/g	86.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		208	200	pg/g	104	(23%-140%)
13C-OCDD		415	400	pg/g	104	(17%-157%)
13C-2,3,7,8-TCDF		203	200	pg/g	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		219	200	pg/g	109	(24%-185%)
13C-2,3,4,7,8-PeCDF		220	200	pg/g	110	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		170	200	pg/g	85.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		166	200	pg/g	82.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		175	200	pg/g	87.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		177	200	pg/g	88.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		184	200	pg/g	92.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		204	200	pg/g	102	(26%-138%)
37Cl-2,3,7,8-TCDD		21.7	20.0	pg/g	109	(35%-197%)

Comments:**J** Value is estimated**K** Estimated Maximum Possible Concentration**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6430	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011086		Matrix: SOLID
Client Sample: QC for batch 26578		
Client ID: LCS for batch 26578		Prep Basis: As Received
Batch ID: 26580	Method: EPA Method 1613B	
Run Date: 08/04/2014 11:57	Analyst: JTF	Instrument: HRP750
Data File: A04AUG14A-2		Dilution: 1
Prep Batch: 26578	Prep Method: SW846 3540C	
Prep Date: 31-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.7	pg/g	0.105	1.00
40321-76-4	1,2,3,7,8-PeCDD		105	pg/g	0.186	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		107	pg/g	0.362	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.8	pg/g	0.380	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		108	pg/g	0.394	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		104	pg/g	0.636	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		207	pg/g	0.918	10.0
51207-31-9	2,3,7,8-TCDF		19.9	pg/g	0.140	1.00
57117-41-6	1,2,3,7,8-PeCDF		98.5	pg/g	0.188	5.00
57117-31-4	2,3,4,7,8-PeCDF		100	pg/g	0.181	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		102	pg/g	0.340	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		105	pg/g	0.338	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		103	pg/g	0.348	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		109	pg/g	0.480	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		105	pg/g	0.422	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		103	pg/g	0.662	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		210	pg/g	0.576	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		166	200	pg/g	82.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		193	200	pg/g	96.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	77.8	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		162	200	pg/g	81.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		171	200	pg/g	85.7	(22%-166%)
13C-OCDD		337	400	pg/g	84.3	(13%-199%)
13C-2,3,7,8-TCDF		183	200	pg/g	91.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		200	200	pg/g	99.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		200	200	pg/g	99.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		161	200	pg/g	80.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		159	200	pg/g	79.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		165	200	pg/g	82.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		163	200	pg/g	81.7	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		169	200	pg/g	84.5	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		175	200	pg/g	87.5	(20%-186%)
37Cl-2,3,7,8-TCDD		20.0	20.0	pg/g	100	(31%-191%)

Comments:

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 6430	Client: TETR001	Project: TETR00114
Lab Sample ID: 12011087		Matrix: SOLID
Client Sample: QC for batch 26578		
Client ID: LCSD for batch 26578		Prep Basis: As Received
Batch ID: 26580	Method: EPA Method 1613B	
Run Date: 08/04/2014 12:44	Analyst: JTF	Instrument: HRP750
Data File: A04AUG14A-3		Dilution: 1
Prep Batch: 26578	Prep Method: SW846 3540C	
Prep Date: 31-JUL-14	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		22.3	pg/g	0.108	1.00
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.210	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		105	pg/g	0.422	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		104	pg/g	0.402	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		115	pg/g	0.438	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		104	pg/g	0.482	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		206	pg/g	0.706	10.0
51207-31-9	2,3,7,8-TCDF		20.2	pg/g	0.115	1.00
57117-41-6	1,2,3,7,8-PeCDF		101	pg/g	0.246	5.00
57117-31-4	2,3,4,7,8-PeCDF		103	pg/g	0.232	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		103	pg/g	0.392	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		110	pg/g	0.382	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		105	pg/g	0.402	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		108	pg/g	0.556	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		105	pg/g	0.442	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		103	pg/g	0.640	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		208	pg/g	0.744	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		175	200	pg/g	87.6	(20%-175%)
13C-1,2,3,7,8-PeCDD		190	200	pg/g	95.0	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		163	200	pg/g	81.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		160	200	pg/g	79.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		181	200	pg/g	90.3	(22%-166%)
13C-OCDD		356	400	pg/g	89.0	(13%-199%)
13C-2,3,7,8-TCDF		198	200	pg/g	98.9	(22%-152%)
13C-1,2,3,7,8-PeCDF		201	200	pg/g	100	(21%-192%)
13C-2,3,4,7,8-PeCDF		206	200	pg/g	103	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		167	200	pg/g	83.5	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		164	200	pg/g	82.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		170	200	pg/g	84.8	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		173	200	pg/g	86.5	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		174	200	pg/g	87.1	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		187	200	pg/g	93.4	(20%-186%)
37Cl-2,3,7,8-TCDD		20.7	20.0	pg/g	104	(31%-191%)

Comments:



March 06, 2014

Mr. Dave Kinroth
Seagull Environmental Technologies, Inc.
20 James Town Farm Drive
Florissant, Missouri 63034

Re: Strecker Forest Removal
Work Order: 343609

Dear Mr. Kinroth:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 18, 2014. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4485.

Sincerely,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 1096441
Enclosures



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Case Narrative

Tetra Tech, Inc. (Contract#)
Strecker Forest Removal
SDG: 343609

**Receipt Narrative
for
Tetra Tech, Inc. (Contract#)
SDG: 343609**

March 06, 2014

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary:

Sample receipt: The sample arrived at GEL Laboratories LLC, Charleston, South Carolina on February 18, 2014 for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

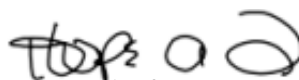
Sample Identification: The laboratory received the following sample:

<u>Laboratory ID</u>	<u>Client ID</u>
343609001	SFRA-3

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: GC Semivolatile PCB, GC/MS Semivolatile, GC/MS Volatile and Metals.



Hope Taylor for
Valerie Davis
Project Manager

Chain of Custody and Supporting Documentation

Attention: Valerie Davis

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

3/36/09

Call

ACTIVITY LEADER(Print) Dave Kinroth	314-517-6798	NAME OF SURVEY OR ACTIVITY Strecker Forest Removal Action	DATE OF COLLECTION DAY MONTH YEAR 12 2 14	SHEET 1 of 1
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CONTENTS OF SHIPMENT

TIME
1057

SAMPLE NUMBER	TYPE OF CONTAINERS				VOA SET VIALS EA	SAMPLED MEDIA					RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	CUBITAINER	BOTTLE	BOTTLE	BOTTLE		water	soil	sediment	dust	other	
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
SFRA-3		3			1	X					Analyze VOCS SVOCs PCBs RCRA Metals

DESCRIPTION OF SHIPMENT 4 PIECE(S) CONSISTING OF _____ BOX(ES) 1 ICE CHEST(S): OTHER _____	MODE OF SHIPMENT <input checked="" type="checkbox"/> COMMERCIAL CARRIER: <u>FedEx</u> <input type="checkbox"/> COURIER <input type="checkbox"/> SAMPLER CONVEYED
	<u>8750 8908 6386</u> (SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD				
RELINQUISHED BY (SAMPLER) <u>Dave Kinroth</u>	DATE <u>2-17-14</u>	TIME <u>14:34</u>	RECEIVED BY [] SEALED [] UNSEALED	REASON FOR CHANGE OF CUSTODY <u>Transport to Lab for Analysis</u>
<input checked="" type="checkbox"/> SEALED [] UNSEALED				
RELINQUISHED BY	DATE <u>2/18/14</u>	TIME <u>08:50</u>	RECEIVED BY <u>P. Went</u>	REASON FOR CHANGE OF CUSTODY
[] SEALED [] UNSEALED			[] SEALED [] UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
[] SEALED [] UNSEALED			[] SEALED [] UNSEALED	

Client: TETR		SDG/AR/COC/Work Order: 343609
Received By: P. West		Date Received: 2/18/14
Suspected Hazard Information	Yes	No
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>

*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

Maximum Net Counts Observed* (Observed Counts - Area Background Counts): **0CPM**

If yes, Were swipes taken of sample containers < action levels?

If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.

Hazard Class Shipped: _____ UN#: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe) 2C
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 130462966
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?		<input checked="" type="checkbox"/>		Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?		<input checked="" type="checkbox"/>		CLIENTS
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.	<input checked="" type="checkbox"/>			Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other 8750 8908 6386-2C

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 06 March 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122013-11
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Volatile Analysis

Case Narrative

**ChemStation Case Narrative
Tetra Tech, Inc. (TETR)
SDG 343609**

Method/Analysis Information

Procedure:	Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer
Analytical Method:	SW846 8260B
Prep Method:	SW846 5030
Analytical Batch Number:	1369457
Prep Batch Number:	1369456

Sample Analysis

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

Sample ID	Client ID
343609001	SFRA-3
1203042665	Method Blank (MB)
1203042666	343609001(SFRA-3) Post Spike (PS)
1203042667	343609001(SFRA-3) Post Spike Duplicate (PSD)
1203042668	Laboratory Control Sample (LCS)
1203042669	Laboratory Control Sample (LCS)
1203042797	343609001(SFRA-3) Post Spike (PS)
1203042798	343609001(SFRA-3) Post Spike Duplicate (PSD)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 21.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 19.1.2. False positive analytes are designated on the quantitation report with a 'd' qualifier.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package.

The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Blank (MB) Statement

Target analytes were detected in the blank 1203042665 (MB) above the reporting limit. Acetone, a known lab contaminant, was detected in the blank above the reporting limit; however, it was not detected in the client sample. The sample was analyzed on the last day of holding; therefore, the data were reported.

Surrogate Recoveries

Surrogate recoveries in samples 1203042666(SFRA-3), 1203042667(SFRA-3), 203042797, 1203042798(SFRA-3) and 343609001(SFRA-3) were biased high outside of the acceptance limits. All of the results confirmed each; therefore, the data were reported.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 343609001 (SFRA-3) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement

The spike 1203042666 (SFRA-3) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Matrix Spike Duplicate (PSD) Recovery Statement

The spike duplicate 1203042667 (SFRA-3) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Relative Percent Difference (RPD) Statement

The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance

Internal standard responses were outside of the acceptance criteria and very similar to those of the MS/MSD pairs. The data were reported. 343609001 (SFRA-3).

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-analyses were not required for samples in this SDG.

Miscellaneous Information**Data Exception (DER) Documentation**

The following DER was generated for this SDG: 1271096 1203042665 (MB), 1203042666 (SFRA-3), 1203042667 (SFRA-3), 1203042797 (SFRA-3), 1203042798 (SFRA-3) and 343609001 (SFRA-3).

Manual Integrations

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

TIC Comment

Tentatively identified compounds (TIC) were not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

Residual Chlorine was not detected in any of the samples in this SDG.

System Configuration

The Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA9.I	Agilent 6890/5973 GC/MS w/ OI Eclipse/Archon Autosampler	HP6890/HP5973	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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Qualifier Definition Report for

TETR055 Tetra Tech, Inc. (Contract#)

Client SDG: 343609 GEL Work Order: 343609

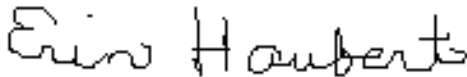
The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- B The target analyte was detected in the associated blank.
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 05 MAR 2014

Title: Data Validator

Sample Data Summary

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Certificate of Analysis

Report Date: March 5, 2014

Company : Seagull Environmental Technologies, Inc.
Address : 20 James Town Farm Drive

Florissant, Missouri 63034

Contact: Mr. Dave Kinroth
Project: Strecker Forest Removal

Client Sample ID: SFRA-3 Project: TETR00055
Sample ID: 343609001 Client ID: TETR055
Matrix: Soil
Collect Date: 13-FEB-14 10:02
Receive Date: 18-FEB-14
Collector: Client
Moisture: 9.06%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
Volatiles "Dry Weight Corrected"											
1,1,1-Trichloroethane	U	ND	0.330	1.10	ug/kg	1	RXY1	02/27/14	1541	1369457	1
1,1,2,2-Tetrachloroethane	U	ND	0.330	1.10	ug/kg	1					
1,1,2-Trichloroethane	U	ND	0.330	1.10	ug/kg	1					
1,1-Dichloroethane	U	ND	0.330	1.10	ug/kg	1					
1,1-Dichloroethylene	U	ND	0.330	1.10	ug/kg	1					
1,2,3-Trichlorobenzene	U	ND	0.440	1.10	ug/kg	1					
1,2,4-Trichlorobenzene	J	0.484	0.330	1.10	ug/kg	1					
1,2-Dibromo-3-chloropropane	U	ND	0.550	1.10	ug/kg	1					
1,2-Dibromoethane	U	ND	0.330	1.10	ug/kg	1					
1,2-Dichlorobenzene	U	ND	0.330	1.10	ug/kg	1					
1,2-Dichloroethane	U	ND	0.330	1.10	ug/kg	1					
1,2-Dichloropropane	U	ND	0.330	1.10	ug/kg	1					
1,3-Dichlorobenzene	U	ND	0.330	1.10	ug/kg	1					
1,4-Dichlorobenzene	U	ND	0.330	1.10	ug/kg	1					
2-Butanone	U	ND	1.65	5.50	ug/kg	1					
2-Hexanone	U	ND	1.65	5.50	ug/kg	1					
4-Methyl-2-pentanone	U	ND	1.65	5.50	ug/kg	1					
Acetone	U	ND	1.65	5.50	ug/kg	1					
Benzene	U	ND	0.330	1.10	ug/kg	1					
Bromochloromethane	U	ND	0.330	1.10	ug/kg	1					
Bromodichloromethane	U	ND	0.330	1.10	ug/kg	1					
Bromoform	U	ND	0.330	1.10	ug/kg	1					
Bromomethane	U	ND	0.330	1.10	ug/kg	1					
Carbon disulfide	U	ND	1.65	5.50	ug/kg	1					
Carbon tetrachloride	U	ND	0.330	1.10	ug/kg	1					
Chlorobenzene	U	ND	0.330	1.10	ug/kg	1					
Chloroethane	U	ND	0.330	1.10	ug/kg	1					
Chloroform	U	ND	0.330	1.10	ug/kg	1					
Chloromethane	U	ND	0.330	1.10	ug/kg	1					
Cyclohexane	U	ND	0.330	1.10	ug/kg	1					
Dibromochloromethane	U	ND	0.330	1.10	ug/kg	1					
Dichlorodifluoromethane	U	ND	0.330	1.10	ug/kg	1					
Ethylbenzene	U	ND	0.330	1.10	ug/kg	1					
Isopropylbenzene	U	ND	0.330	1.10	ug/kg	1					
Methyl acetate	U	ND	1.65	5.50	ug/kg	1					
Methylcyclohexane	U	ND	0.440	1.10	ug/kg	1					

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Certificate of Analysis

Report Date: March 5, 2014

Company : Seagull Environmental Technologies, Inc.
Address : 20 James Town Farm Drive

Florissant, Missouri 63034

Contact: Mr. Dave Kinroth
Project: Strecker Forest Removal

Client Sample ID: SFRA-3 Project: TETR00055
Sample ID: 343609001 Client ID: TETR055

Volatiles Organics

Volatiles "Dry Weight Corrected"

Methylene chloride	U	ND	2.20	5.50	ug/kg	1
Styrene	U	ND	0.330	1.10	ug/kg	1
Tetrachloroethylene	U	ND	0.330	1.10	ug/kg	1
Toluene	U	ND	0.330	1.10	ug/kg	1
Trichloroethylene	U	ND	0.330	1.10	ug/kg	1
Trichlorofluoromethane	U	ND	0.330	1.10	ug/kg	1
1,1,2-Trichloro-1,2,2-trifluoroethane	U	ND	1.65	5.50	ug/kg	1
Vinyl chloride	U	ND	0.330	1.10	ug/kg	1
cis-1,2-Dichloroethylene	U	ND	0.330	1.10	ug/kg	1
cis-1,3-Dichloropropylene	U	ND	0.330	1.10	ug/kg	1
m,p-Xylenes	U	ND	0.330	2.20	ug/kg	1
o-Xylene	U	ND	0.330	1.10	ug/kg	1
tert-Butyl methyl ether	U	ND	0.330	1.10	ug/kg	1
trans-1,2-Dichloroethylene	U	ND	0.330	1.10	ug/kg	1
trans-1,3-Dichloropropylene	U	ND	0.330	1.10	ug/kg	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 5030	Volatile 5030 Solid Prep	RXY1	02/27/14	1330	1369456

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	Volatiles "Dry Weight Corrected"	52.5 ug/kg	50.0	95.5	(76%-122%)
Bromofluorobenzene	Volatiles "Dry Weight Corrected"	71.5 ug/kg	50.0	130*	(80%-120%)
Toluene-d8	Volatiles "Dry Weight Corrected"	63.8 ug/kg	50.0	116	(80%-120%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: March 5, 2014

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Seagull Environmental Technologies, Inc.
20 James Town Farm Drive
Florissant, Missouri

Contact: Mr. Dave Kinroth

Workorder: 343609

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
QC1203042668	LCS										
1,1,1-Trichloroethane	50.0			48.3	ug/kg		96.7	(79%-125%)	RXY1	02/27/14	09:06
1,1,2,2-Tetrachloroethane	50.0			51.0	ug/kg		102	(77%-120%)			
1,1,2-Trichloroethane	50.0			49.2	ug/kg		98.4	(77%-120%)			
1,1-Dichloroethane	50.0			47.8	ug/kg		95.5	(75%-120%)			
1,1-Dichloroethylene	50.0			45.4	ug/kg		90.8	(77%-125%)			
1,2,3-Trichlorobenzene	50.0			52.3	ug/kg		105	(62%-129%)			
1,2,4-Trichlorobenzene	50.0			53.1	ug/kg		106	(67%-126%)			
1,2-Dibromo-3-chloropropane	50.0			42.9	ug/kg		85.9	(62%-133%)			
1,2-Dibromoethane	50.0			50.4	ug/kg		101	(80%-120%)			
1,2-Dichlorobenzene	50.0			50.5	ug/kg		101	(77%-120%)			
1,2-Dichloroethane	50.0			45.1	ug/kg		90.1	(69%-120%)			
1,2-Dichloropropane	50.0			47.1	ug/kg		94.2	(75%-120%)			
1,3-Dichlorobenzene	50.0			49.4	ug/kg		98.8	(76%-120%)			
1,4-Dichlorobenzene	50.0			49.0	ug/kg		98	(77%-120%)			
2-Butanone	250			221	ug/kg		88.3	(57%-149%)			
2-Hexanone	250			262	ug/kg		105	(69%-145%)			
4-Methyl-2-pentanone	250			246	ug/kg		98.4	(79%-129%)			
Acetone	250		B	238	ug/kg		95.4	(55%-146%)			
Benzene	50.0			45.5	ug/kg		90.9	(74%-120%)			
Bromochloromethane	50.0			46.5	ug/kg		92.9	(80%-120%)			

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
Bromodichloromethane	50.0			48.5	ug/kg		97	(77%-121%)	RXY1	02/27/14	09:06
Bromoform	50.0			44.3	ug/kg		88.6	(62%-132%)			
Bromomethane	50.0			44.2	ug/kg		88.4	(67%-120%)			
Carbon disulfide	250			256	ug/kg		103	(78%-136%)			
Carbon tetrachloride	50.0			50.4	ug/kg		101	(80%-127%)			
Chlorobenzene	50.0			49.1	ug/kg		98.2	(78%-120%)			
Chloroethane	50.0			46.0	ug/kg		91.9	(70%-120%)			
Chloroform	50.0			46.0	ug/kg		91.9	(75%-120%)			
Chloromethane	50.0			46.3	ug/kg		92.6	(59%-124%)			
Cyclohexane	50.0			50.0	ug/kg		100	(75%-123%)			
Dibromochloromethane	50.0			51.2	ug/kg		102	(72%-123%)			
Dichlorodifluoromethane	50.0			52.5	ug/kg		105	(58%-126%)			
Ethylbenzene	50.0			49.5	ug/kg		98.9	(77%-120%)			
Isopropylbenzene	50.0			52.1	ug/kg		104	(78%-120%)			
Methyl acetate	250			257	ug/kg		103	(65%-129%)			
Methylcyclohexane	50.0			50.4	ug/kg		101	(77%-121%)			
Methylene chloride	50.0			42.0	ug/kg		83.9	(73%-120%)			
Styrene	50.0			52.2	ug/kg		104	(80%-120%)			
Tetrachloroethylene	50.0			49.2	ug/kg		98.5	(77%-120%)			
Toluene	50.0			48.5	ug/kg		97.1	(75%-120%)			
Trichloroethylene	50.0			46.8	ug/kg		93.5	(80%-120%)			

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
Trichlorofluoromethane	50.0			45.1	ug/kg		90.3	(71%-120%)			
Vinyl chloride	50.0			46.3	ug/kg		92.5	(58%-122%)	RXY1	02/27/14	09:06
cis-1,2-Dichloroethylene	50.0			48.1	ug/kg		96.1	(76%-120%)			
cis-1,3-Dichloropropylene	50.0			43.5	ug/kg		87	(79%-121%)			
m,p-Xylenes	100			101	ug/kg		101	(79%-120%)			
o-Xylene	50.0			51.6	ug/kg		103	(78%-120%)			
tert-Butyl methyl ether	50.0			47.9	ug/kg		95.7	(78%-120%)			
trans-1,2-Dichloroethylene	50.0			45.9	ug/kg		91.7	(76%-120%)			
trans-1,3-Dichloropropylene	50.0			53.6	ug/kg		107	(75%-120%)			
**1,2-Dichloroethane-d4	50.0			47.8	ug/L		95.5	(76%-122%)			
**Bromofluorobenzene	50.0			51.4	ug/L		103	(80%-120%)			
**Toluene-d8	50.0			50.9	ug/L		102	(80%-120%)			
QC1203042669	LCS										
1,1,2-Trichloro-1,2,2-trifluoroethane	250			211	ug/kg		84.4	(76%-130%)		02/27/14	14:45
**1,2-Dichloroethane-d4	50.0			48.0	ug/L		96	(76%-122%)			
**Bromofluorobenzene	50.0			52.3	ug/L		105	(80%-120%)			
**Toluene-d8	50.0			49.8	ug/L		99.7	(80%-120%)			
QC1203042665	MB										
1,1,1-Trichloroethane			U	ND	ug/kg					02/27/14	15:13
1,1,2,2-Tetrachloroethane			U	ND	ug/kg						
1,1,2-Trichloro-1,2,2-trifluoroethane			U	ND	ug/kg						
1,1,2-Trichloroethane			U	ND	ug/kg						
1,1-Dichloroethane			U	ND	ug/kg						
1,1-Dichloroethylene			U	ND	ug/kg						

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QC Summary

Workorder: 343609

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
1,2,3-Trichlorobenzene			U	ND	ug/kg				RXY1	02/27/14	15:13
1,2,4-Trichlorobenzene			U	ND	ug/kg						
1,2-Dibromo-3-chloropropane			U	ND	ug/kg						
1,2-Dibromoethane			U	ND	ug/kg						
1,2-Dichlorobenzene			U	ND	ug/kg						
1,2-Dichloroethane			U	ND	ug/kg						
1,2-Dichloropropane			U	ND	ug/kg						
1,3-Dichlorobenzene			U	ND	ug/kg						
1,4-Dichlorobenzene			U	ND	ug/kg						
2-Butanone			U	ND	ug/kg						
2-Hexanone			U	ND	ug/kg						
4-Methyl-2-pentanone			U	ND	ug/kg						
Acetone				6.76	ug/kg						
Benzene			U	ND	ug/kg						
Bromochloromethane			U	ND	ug/kg						
Bromodichloromethane			U	ND	ug/kg						
Bromoform			U	ND	ug/kg						
Bromomethane			U	ND	ug/kg						
Carbon disulfide			U	ND	ug/kg						
Carbon tetrachloride			U	ND	ug/kg						
Chlorobenzene			U	ND	ug/kg						

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QC Summary

Workorder: 343609

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
Chloroethane			U	ND	ug/kg						
Chloroform			U	ND	ug/kg				RXY1	02/27/14	15:13
Chloromethane			U	ND	ug/kg						
Cyclohexane			U	ND	ug/kg						
Dibromochloromethane			U	ND	ug/kg						
Dichlorodifluoromethane			U	ND	ug/kg						
Ethylbenzene			U	ND	ug/kg						
Isopropylbenzene			U	ND	ug/kg						
Methyl acetate			U	ND	ug/kg						
Methylcyclohexane			U	ND	ug/kg						
Methylene chloride			U	ND	ug/kg						
Styrene			U	ND	ug/kg						
Tetrachloroethylene			U	ND	ug/kg						
Toluene			U	ND	ug/kg						
Trichloroethylene			U	ND	ug/kg						
Trichlorofluoromethane			U	ND	ug/kg						
Vinyl chloride			U	ND	ug/kg						
cis-1,2-Dichloroethylene			U	ND	ug/kg						
cis-1,3-Dichloropropylene			U	ND	ug/kg						
m,p-Xylenes			U	ND	ug/kg						
o-Xylene			U	ND	ug/kg						
tert-Butyl methyl ether			U	ND	ug/kg						

GEL LABORATORIES LLC

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
trans-1,2-Dichloroethylene			U	ND	ug/kg						
trans-1,3-Dichloropropylene			U	ND	ug/kg				RXY1	02/27/14	15:13
**1,2-Dichloroethane-d4	50.0			47.7	ug/L		95.3	(76%-122%)			
**Bromofluorobenzene	50.0			49.6	ug/L		99.3	(80%-120%)			
**Toluene-d8	50.0			50.9	ug/L		102	(80%-120%)			
QC1203042666 343609001 PS											
1,1,1-Trichloroethane	50.0	U	ND	41.7	ug/L		83.4	(71%-128%)		02/27/14	16:10
1,1,2,2-Tetrachloroethane	50.0	U	ND	62.3	ug/L		125	(68%-132%)			
1,1,2-Trichloroethane	50.0	U	ND	47.2	ug/L		94.4	(73%-121%)			
1,1-Dichloroethane	50.0	U	ND	42.0	ug/L		84	(70%-125%)			
1,1-Dichloroethylene	50.0	U	ND	39.5	ug/L		78.9	(67%-135%)			
1,2,3-Trichlorobenzene	50.0	U	ND	21.0	ug/L		42 *	(50%-136%)			
1,2,4-Trichlorobenzene	50.0	J	0.440	23.8	ug/L		46.8 *	(49%-138%)			
1,2-Dibromo-3-chloropropane	50.0	U	ND	43.5	ug/L		87.1	(54%-133%)			
1,2-Dibromoethane	50.0	U	ND	46.5	ug/L		92.9	(73%-125%)			
1,2-Dichlorobenzene	50.0	U	ND	42.3	ug/L		84.5	(63%-123%)			
1,2-Dichloroethane	50.0	U	ND	38.9	ug/L		77.7	(67%-119%)			
1,2-Dichloropropane	50.0	U	ND	39.9	ug/L		79.7	(69%-122%)			
1,3-Dichlorobenzene	50.0	U	ND	43.2	ug/L		86.3	(62%-125%)			
1,4-Dichlorobenzene	50.0	U	ND	42.2	ug/L		84.4	(62%-122%)			
2-Butanone	250	U	ND	178	ug/L		71.1	(44%-145%)			
2-Hexanone	250	U	ND	220	ug/L		88.1	(47%-147%)			
4-Methyl-2-pentanone	250	U	ND	228	ug/L		91.2	(71%-133%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
Acetone	250	U	ND B	198	ug/L	79.1	(42%-147%)	RXY1	02/27/14	16:10	
Benzene	50.0	U	ND	40.0	ug/L	80.1	(67%-124%)				
Bromochloromethane	50.0	U	ND	40.7	ug/L	81.4	(73%-123%)				
Bromodichloromethane	50.0	U	ND	41.1	ug/L	82.2	(67%-124%)				
Bromoform	50.0	U	ND	51.7	ug/L	103	(54%-131%)				
Bromomethane	50.0	U	ND	45.3	ug/L	90.6	(47%-135%)				
Carbon disulfide	250	U	ND	202	ug/L	80.7	(64%-147%)				
Carbon tetrachloride	50.0	U	ND	41.0	ug/L	82	(70%-129%)				
Chlorobenzene	50.0	U	ND	42.3	ug/L	84.6	(68%-120%)				
Chloroethane	50.0	U	ND	50.1	ug/L	100	(52%-129%)				
Chloroform	50.0	U	ND	41.3	ug/L	82.6	(70%-123%)				
Chloromethane	50.0	U	ND	51.1	ug/L	102	(54%-139%)				
Cyclohexane	50.0	U	ND	35.2	ug/L	70.3	(64%-130%)				
Dibromochloromethane	50.0	U	ND	45.7	ug/L	91.5	(66%-122%)				
Dichlorodifluoromethane	50.0	U	ND	56.8	ug/L	114	(46%-134%)				
Ethylbenzene	50.0	U	ND	42.7	ug/L	85.5	(63%-122%)				
Isopropylbenzene	50.0	U	ND	58.5	ug/L	117	(64%-132%)				
Methyl acetate	250	U	ND	233	ug/L	93.3	(59%-137%)				
Methylcyclohexane	50.0	U	ND	26.5	ug/L	52.9*	(63%-130%)				
Methylene chloride	50.0	U	ND	37.8	ug/L	75.6	(68%-123%)				
Styrene	50.0	U	ND	39.9	ug/L	79.7	(70%-126%)				

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
Tetrachloroethylene	50.0	U	ND	42.2	ug/L		84.3	(64%-123%)			
Toluene	50.0	U	ND	47.6	ug/L		95.2	(64%-124%)	RXY1	02/27/14	16:10
Trichloroethylene	50.0	U	ND	39.9	ug/L		79.7	(68%-130%)			
Trichlorofluoromethane	50.0	U	ND	47.6	ug/L		95.1	(61%-126%)			
Vinyl chloride	50.0	U	ND	49.5	ug/L		98.9	(47%-141%)			
cis-1,2-Dichloroethylene	50.0	U	ND	41.2	ug/L		82.3	(70%-125%)			
cis-1,3-Dichloropropylene	50.0	U	ND	32.8	ug/L		65.6*	(67%-127%)			
m,p-Xylenes	100	U	ND	84.1	ug/L		84.1	(62%-124%)			
o-Xylene	50.0	U	ND	42.1	ug/L		84.1	(64%-122%)			
tert-Butyl methyl ether	50.0	U	ND	40.2	ug/L		80.5	(72%-118%)			
trans-1,2-Dichloroethylene	50.0	U	ND	39.0	ug/L		77.9	(67%-129%)			
trans-1,3-Dichloropropylene	50.0	U	ND	46.6	ug/L		93.2	(68%-122%)			
**1,2-Dichloroethane-d4	50.0		47.8	46.3	ug/L		92.6	(76%-122%)			
**Bromofluorobenzene	50.0		65.0	65.0	ug/L		130*	(80%-120%)			
**Toluene-d8	50.0		58.0	55.9	ug/L		112	(80%-120%)			
QC1203042797 343609001 PS											
1,1,2-Trichloro-1,2,2-trifluoroethane	250	U	ND	220	ug/L		88.1	(68%-146%)		02/27/14	17:07
**1,2-Dichloroethane-d4	50.0		47.8	48.2	ug/L		96.4	(76%-122%)			
**Bromofluorobenzene	50.0		65.0	65.4	ug/L		131*	(80%-120%)			
**Toluene-d8	50.0		58.0	56.5	ug/L		113	(80%-120%)			
QC1203042667 343609001 PSD											
1,1,1-Trichloroethane	50.0	U	ND	41.5	ug/L	0.481	83	(0%-20%)		02/27/14	16:38
1,1,2,2-Tetrachloroethane	50.0	U	ND	62.7	ug/L	0.576	125	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	ND	46.9	ug/L	0.702	93.7	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
1,1-Dichloroethane	50.0	U	ND	41.7	ug/L	0.741	83.4	(0%-20%)	RXY1	02/27/14	16:38
1,1-Dichloroethylene	50.0	U	ND	40.0	ug/L	1.43	80.1	(0%-20%)			
1,2,3-Trichlorobenzene	50.0	U	ND	19.3	ug/L	8.55	38.5*	(0%-20%)			
1,2,4-Trichlorobenzene	50.0	J	0.440	22.8	ug/L	4.37	44.8*	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	ND	42.1	ug/L	3.41	84.2	(0%-20%)			
1,2-Dibromoethane	50.0	U	ND	46.2	ug/L	0.475	92.5	(0%-20%)			
1,2-Dichlorobenzene	50.0	U	ND	41.6	ug/L	1.57	83.2	(0%-20%)			
1,2-Dichloroethane	50.0	U	ND	39.4	ug/L	1.35	78.8	(0%-20%)			
1,2-Dichloropropane	50.0	U	ND	41.0	ug/L	2.80	82	(0%-20%)			
1,3-Dichlorobenzene	50.0	U	ND	42.8	ug/L	0.931	85.5	(0%-20%)			
1,4-Dichlorobenzene	50.0	U	ND	42.9	ug/L	1.69	85.8	(0%-20%)			
2-Butanone	250	U	ND	182	ug/L	2.15	72.6	(0%-20%)			
2-Hexanone	250	U	ND	215	ug/L	2.39	86	(0%-20%)			
4-Methyl-2-pentanone	250	U	ND	223	ug/L	2.13	89.3	(0%-20%)			
Acetone	250	U	ND	B 197	ug/L	0.624	78.6	(0%-20%)			
Benzene	50.0	U	ND	40.4	ug/L	1.02	80.9	(0%-20%)			
Bromochloromethane	50.0	U	ND	39.9	ug/L	1.93	79.9	(0%-20%)			
Bromodichloromethane	50.0	U	ND	42.1	ug/L	2.52	84.3	(0%-20%)			
Bromoform	50.0	U	ND	52.3	ug/L	0.981	105	(0%-20%)			
Bromomethane	50.0	U	ND	41.0	ug/L	9.92	82	(0%-20%)			
Carbon disulfide	250	U	ND	196	ug/L	2.86	78.4	(0%-20%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
Carbon tetrachloride	50.0	U	ND	41.6	ug/L	1.31	83.1	(0%-20%)			
Chlorobenzene	50.0	U	ND	43.2	ug/L	2.17	86.5	(0%-20%)	RXY1	02/27/14	16:38
Chloroethane	50.0	U	ND	44.9	ug/L	10.9	89.9	(0%-20%)			
Chloroform	50.0	U	ND	40.5	ug/L	2.05	80.9	(0%-20%)			
Chloromethane	50.0	U	ND	46.3	ug/L	9.87	92.5	(0%-20%)			
Cyclohexane	50.0	U	ND	36.1	ug/L	2.58	72.1	(0%-20%)			
Dibromochloromethane	50.0	U	ND	45.9	ug/L	0.306	91.7	(0%-20%)			
Dichlorodifluoromethane	50.0	U	ND	52.4	ug/L	8.21	105	(0%-20%)			
Ethylbenzene	50.0	U	ND	43.4	ug/L	1.53	86.8	(0%-20%)			
Isopropylbenzene	50.0	U	ND	59.5	ug/L	1.66	119	(0%-20%)			
Methyl acetate	250	U	ND	207	ug/L	12.1	82.7	(0%-20%)			
Methylcyclohexane	50.0	U	ND	28.2	ug/L	6.40	56.4*	(0%-20%)			
Methylene chloride	50.0	U	ND	37.7	ug/L	0.238	75.4	(0%-20%)			
Styrene	50.0	U	ND	41.5	ug/L	3.91	82.9	(0%-20%)			
Tetrachloroethylene	50.0	U	ND	42.4	ug/L	0.686	84.9	(0%-20%)			
Toluene	50.0	U	ND	47.0	ug/L	1.20	94.1	(0%-20%)			
Trichloroethylene	50.0	U	ND	40.1	ug/L	0.675	80.3	(0%-20%)			
Trichlorofluoromethane	50.0	U	ND	43.2	ug/L	9.56	86.4	(0%-20%)			
Vinyl chloride	50.0	U	ND	45.5	ug/L	8.27	91.1	(0%-20%)			
cis-1,2-Dichloroethylene	50.0	U	ND	40.9	ug/L	0.732	81.7	(0%-20%)			
cis-1,3-Dichloropropylene	50.0	U	ND	33.1	ug/L	0.971	66.2*	(0%-20%)			
m,p-Xylenes	100	U	ND	86.3	ug/L	2.52	86.3	(0%-20%)			

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QC Summary

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1369457										
o-Xylene	50.0	U	ND	42.6	ug/L	1.16	85.1	(0%-20%)			
tert-Butyl methyl ether	50.0	U	ND	40.6	ug/L	0.792	81.1	(0%-20%)	RXY1	02/27/14	16:38
trans-1,2-Dichloroethylene	50.0	U	ND	39.5	ug/L	1.30	79	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	ND	45.6	ug/L	2.19	91.2	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		47.8	46.5	ug/L		92.9	(76%-122%)			
**Bromofluorobenzene	50.0		65.0	66.0	ug/L		132*	(80%-120%)			
**Toluene-d8	50.0		58.0	55.1	ug/L		110	(80%-120%)			
QC1203042798	343609001	PSD									
1,1,2-Trichloro-1,2,2-trifluoroethane	250	U	ND	198	ug/L		79.3*	(0%-20%)		02/27/14	17:35
**1,2-Dichloroethane-d4	50.0		47.8	47.1	ug/L		94.2	(76%-122%)			
**Bromofluorobenzene	50.0		65.0	65.9	ug/L		132*	(80%-120%)			
**Toluene-d8	50.0		58.0	56.6	ug/L		113	(80%-120%)			

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B The target analyte was detected in the associated blank.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- JNX Non Calibrated Compound
- N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
N/A											
N/A											
N1											
ND											
NJ											
P											
Q											
R											
U											
UJ											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 28-FEB-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VOA GC/MS	Test / Method: SW846 8260B	Matrix Type: Solid	Client Code: TETR 343609
Batch ID: 1369457	Sample Numbers: 343609001, 1203042665, 1203042666, 1203042667, 1203042797, 1203042798		

Potentially affected work order(s)(SDG): 343609

Application Issues:

- Failed Recovery for MS/PS
- Method Blank contamination
- Other
- Failed Yield for Surrogates
- Failed Recovery for MSD/PSD

**Specification and Requirements
Exception Description:**

DER Disposition:

1. Samples 343609001, 1203042666/2667, 1203042797/2798 did not meet the acceptable recovery criteria for several of the target compounds.
2. Samples 343609001, 1203042666/2667, 1203042797/2798 did not meet the acceptable recovery criteria for surrogate recoveries.
3. Sample 343609001 did not meet the acceptable recovery criteria for the internal standards.
4. QC sample MB 1203042665 contained a result for Acetone at 6.76 ug/kg.

- 1/2/3. The samples recovered in a very similar manner; therefore, indicating the presence of matrix interference. The samples were analyzed and reported on the last day of holding.
4. Acetone, a known lab contaminant, was not detected insample 343609001; therefore, the data were narrated and reported on the last day of holding.

Originator's Name:

Ramona Yarbrough 28-FEB-14

Data Validator/Group Leader:

Erin Haubert 05-MAR-14

Semi-Volatile Analysis

Case Narrative

**Semi-Volatile Case Narrative
Tetra Tech, Inc. (TETR)
SDG 343609**

Method/Analysis Information

Procedure: Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry

Analytical Method: SW846 3541/8270D

Prep Method: SW846 3541

Analytical Batch Number: 1369009

Prep Batch Number: 1369008

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3541/8270D:

Sample ID	Client ID
343609001	SFRA-3
1203041530	Method Blank (MB)
1203041531	Laboratory Control Sample (LCS)
1203041532	343609001(SFRA-3) Matrix Spike (MS)
1203041533	343609001(SFRA-3) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-009 REV# 32.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at

GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries

All the surrogate recoveries were within the established acceptance criteria for this SDG in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS(1203041531) recovered Hexachlorocyclopentadiene at 22.8%. The limits are 24%-84%. Hexachlorocyclopentadiene is known to be a poor responding analyte that is subject to thermal decomposition as stated in the Method. This may account for the low recovery of the analyte in the LCS, as well as the zero percent recoveries in the MS and MSD. The data results have been reported.

QC Sample Designation

Sample 343609001 (SFRA-3) was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

The MS(1203041532(SFRA-3)) recovered Hexachlorocyclopentadiene at 0% (limits are 12%-106%) and N-Nitrosodipropylamine at 0% (limits are 23%-117%). Hexachlorocyclopentadiene is known to be a poor responding analyte that is subject to thermal decomposition as stated in the Method. This may account for the zero percent recoveries in the MS and MSD, as well as the low recovery of the analyte in the LCS. Since both the MS and MSD displayed failures and the sample data chromatograms displayed excessive matrix interference, the failures were attributed to sample matrix interference and the data results have been reported.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD(1203041533) recovered Hexachlorocyclopentadiene at 0% (limits are 12%-106%) and 2,4-Dinitrophenol at 12.5% (limits are 19%-101%). Hexachlorocyclopentadiene is known to be a poor responding analyte that is subject to thermal decomposition as stated in the Method. This may account for the zero percent recoveries in the MS and MSD, as well as the low recovery of the analyte in the LCS. Since both the MS and MSD displayed failures and the sample data chromatograms displayed excessive matrix interference, the failures were attributed to sample matrix interference and the data results have been reported. 1203041533 (SFRA-3) and All.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD met the acceptance limits.

Internal Standard (ISTD) Acceptance

The internal standard responses used to quantitate the requested target analytes were within the required acceptance criteria for the SDG associated samples in this batch.

Technical Information:

Holding Time Specifications

All samples in this SDG met the specified holding time. GEL assigns holding times based on the associated methodology that assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception report 1271086 was generated for the samples in this batch for this SDG.

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations. Manual integrations, if any, are included with the raw data.

TIC Comment

Tentatively identified compounds (TIC) were not required for the samples in this SDG for this batch.

Additional Comments

Additional comments were not required for the SDG associated samples in this batch.

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

System Configuration

The Semi-Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
MSD5.I	Agilent 6890/5973 GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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Qualifier Definition Report for

TETR055 Tetra Tech, Inc. (Contract#)
Client SDG: 343609 GEL Work Order: 343609

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Barbara Bailey

Date: 06 MAR 2014

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: February 28, 2014

Company : Seagull Environmental Technologies, Inc.
Address : 20 James Town Farm Drive

Florissant, Missouri 63034

Contact: Mr. Dave Kinroth
Project: Strecker Forest Removal

Client Sample ID: SFRA-3 Project: TETR00055
Sample ID: 343609001 Client ID: TETR055
Matrix: Soil
Collect Date: 13-FEB-14 10:02
Receive Date: 18-FEB-14
Collector: Client
Moisture: 9.06%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS											
8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"											
1,1'-Biphenyl	U	ND	133	443	ug/kg	1	RMB	02/27/14	1434	1369009	1
1,2,4,5-TETRACHLORO BENZENE	U	ND	133	443	ug/kg	1					
2,4,5-Trichlorophenol	U	ND	133	443	ug/kg	1					
2,4,6-Trichlorophenol	U	ND	133	443	ug/kg	1					
2,4-Dichlorophenol	U	ND	133	443	ug/kg	1					
2,4-Dimethylphenol	U	ND	133	443	ug/kg	1					
2,4-Dinitrophenol	U	ND	133	886	ug/kg	1					
2,4-Dinitrotoluene	U	ND	133	443	ug/kg	1					
2,6-Dinitrotoluene	U	ND	133	443	ug/kg	1					
2-Chloronaphthalene	U	ND	13.3	44.3	ug/kg	1					
2-Chlorophenol	U	ND	133	443	ug/kg	1					
4,6-Dinitro-2-methylphenol	U	ND	133	443	ug/kg	1					
2-Methylnaphthalene	U	ND	13.3	44.3	ug/kg	1					
2-Nitrophenol	U	ND	133	443	ug/kg	1					
3,3'-Dichlorobenzidine	U	ND	133	443	ug/kg	1					
4-Bromophenyl-phenylether	U	ND	133	443	ug/kg	1					
4-Chloro-3-methylphenol	U	ND	177	443	ug/kg	1					
4-Chloroaniline	U	ND	133	443	ug/kg	1					
4-Chlorophenyl-phenylether	U	ND	133	443	ug/kg	1					
4-Nitrophenol	U	ND	133	443	ug/kg	1					
Acenaphthene	U	ND	13.3	44.3	ug/kg	1					
Acenaphthylene	U	ND	13.3	44.3	ug/kg	1					
Acetophenone	U	ND	133	443	ug/kg	1					
Anthracene	U	ND	13.3	44.3	ug/kg	1					
Atrazine	U	ND	177	443	ug/kg	1					
Benzaldehyde	U	ND	133	443	ug/kg	1					
Benzo(a)anthracene	J	30.1	13.3	44.3	ug/kg	1					
Benzo(a)pyrene	J	19.9	13.3	44.3	ug/kg	1					
Benzo(b)fluoranthene	J	34.1	13.3	44.3	ug/kg	1					
Benzo(ghi)perylene	U	ND	13.3	44.3	ug/kg	1					
Benzo(k)fluoranthene	J	18.6	13.3	44.3	ug/kg	1					
Butylbenzylphthalate	U	ND	133	443	ug/kg	1					
Caprolactam	U	ND	133	443	ug/kg	1					
Carbazole	U	ND	13.3	44.3	ug/kg	1					
Chrysene	J	20.8	13.3	44.3	ug/kg	1					

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Certificate of Analysis

Report Date: February 28, 2014

Company : Seagull Environmental Technologies, Inc.
Address : 20 James Town Farm Drive

Florissant, Missouri 63034

Contact: Mr. Dave Kinroth
Project: Strecker Forest Removal

Client Sample ID: SFRA-3 Project: TETR00055
Sample ID: 343609001 Client ID: TETR055

Semi-Volatile-GC/MS

8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"

Di-n-butylphthalate	U	ND	133	443	ug/kg	1
Di-n-octylphthalate	U	ND	133	443	ug/kg	1
Dibenz(a,h) anthracene	U	ND	13.3	44.3	ug/kg	1
Dibenzofuran	U	ND	133	443	ug/kg	1
Diethylphthalate	U	ND	133	443	ug/kg	1
Dimethylphthalate	U	ND	133	443	ug/kg	1
Diphenylamine	U	ND	133	443	ug/kg	1
Fluoranthene	J	43.0	13.3	44.3	ug/kg	1
Fluorene	U	ND	13.3	44.3	ug/kg	1
Hexachlorobenzene	U	ND	133	443	ug/kg	1
Hexachlorobutadiene	U	ND	133	443	ug/kg	1
Hexachlorocyclopentadiene	U	ND	133	443	ug/kg	1
Hexachloroethane	U	ND	133	443	ug/kg	1
Indeno(1,2,3-cd)pyrene	U	ND	13.3	44.3	ug/kg	1
Isophorone	U	ND	133	443	ug/kg	1
N-Nitroso-di-n-propylamine	U	ND	133	443	ug/kg	1
Naphthalene	U	ND	13.3	44.3	ug/kg	1
Nitrobenzene	U	ND	133	443	ug/kg	1
Pentachlorophenol	U	ND	133	443	ug/kg	1
Phenanthrene	J	19.5	13.3	44.3	ug/kg	1
Phenol	U	ND	133	443	ug/kg	1
Pyrene		49.2	13.3	44.3	ug/kg	1
bis(2-Chloroethoxy)methane	U	ND	133	443	ug/kg	1
bis(2-Chloroethyl) ether	U	ND	133	443	ug/kg	1
bis(2-Ethylhexyl)phthalate	J	370	133	443	ug/kg	1
CRESOLS, M & P	U	ND	133	443	ug/kg	1
3-Nitroaniline	U	ND	133	443	ug/kg	1
2-Methylphenol	U	ND	133	443	ug/kg	1
2-Nitroaniline	U	ND	146	443	ug/kg	1
4-Nitroaniline	U	ND	133	443	ug/kg	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 8270D BNA for Soil	SXW3	02/26/14	1715	1369008

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Certificate of Analysis

Report Date: February 28, 2014

Company : Seagull Environmental Technologies, Inc.
Address : 20 James Town Farm Drive

Florissant, Missouri 63034
Contact: Mr. Dave Kinroth
Project: Strecker Forest Removal

Client Sample ID: SFRA-3

Sample ID: 343609001

Project: TETR00055

Client ID: TETR055

The following Analytical Methods were performed:

Method	Description	Analyst Comments			
1	SW846 3541/8270D				
Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
2-Fluorobiphenyl	8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"	1150 ug/kg	1830	62.8	(25%-100%)
Nitrobenzene-d5	8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"	1090 ug/kg	1830	59.3	(21%-103%)
Terphenyl-d14	8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"	1840 ug/kg	1830	100	(31%-124%)
2,4,6-Tribromophenol	8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"	2940 ug/kg	3660	80.2	(20%-122%)
2-Fluorophenol	8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"	2040 ug/kg	3660	55.7	(23%-107%)
PHENOL-D6	8270D/3541 BNA Soil Automated Soxhlet "Dry Weight Corrected"	2110 ug/kg	3660	57.7	(25%-108%)

Notes:

Quality Control Summary

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QC Summary

Report Date: February 28, 2014

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Seagull Environmental Technologies, Inc.
20 James Town Farm Drive
Florissant, Missouri

Contact: Mr. Dave Kinroth

Workorder: 343609

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
QC1203041531	LCS										
1,1'-Biphenyl	1660			955	ug/kg		57.4	(42%-100%)	RMB	02/27/14	12:29
1,2,4,5-TETRACHLORO BENZENE	1660			927	ug/kg		55.7	(34%-111%)			
2,4,5-Trichlorophenol	1660			1050	ug/kg		62.8	(41%-103%)			
2,4,6-Trichlorophenol	1660			1030	ug/kg		62.2	(36%-98%)			
2,4-Dichlorophenol	1660			986	ug/kg		59.3	(35%-110%)			
2,4-Dimethylphenol	1660			903	ug/kg		54.3	(35%-102%)			
2,4-Dinitrophenol	1660		J	384	ug/kg		23.1	(22%-83%)			
2,4-Dinitrotoluene	1660			1080	ug/kg		64.6	(43%-109%)			
2,6-Dinitrotoluene	1660			1030	ug/kg		61.7	(41%-103%)			
2-Chloronaphthalene	1660			979	ug/kg		58.9	(39%-101%)			
2-Chlorophenol	1660			920	ug/kg		55.3	(38%-100%)			
2-Methylnaphthalene	1660			1000	ug/kg		60.4	(36%-107%)			
2-Methylphenol	1660			953	ug/kg		57.3	(37%-97%)			
2-Nitroaniline	1660			1030	ug/kg		62.1	(34%-116%)			
2-Nitrophenol	1660			1010	ug/kg		60.5	(35%-106%)			
3,3'-Dichlorobenzidine	1660			847	ug/kg		50.9	(32%-111%)			
3-Nitroaniline	1660			977	ug/kg		58.7	(32%-113%)			
4,6-Dinitro-2-methylphenol	1660			707	ug/kg		42.5	(33%-103%)			
4-Bromophenyl-phenylether	1660			1070	ug/kg		64.6	(42%-110%)			
4-Chloro-3-methylphenol	1660			1000	ug/kg		60.4	(35%-104%)			

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
4-Chloroaniline	1660			866	ug/kg		52	(32%-106%)	RMB	02/27/14	12:29
4-Chlorophenyl-phenylether	1660			1010	ug/kg		60.8	(41%-104%)			
4-Nitroaniline	1660			1150	ug/kg		69.1	(35%-150%)			
4-Nitrophenol	1660			796	ug/kg		47.8	(23%-114%)			
Acenaphthene	1660			973	ug/kg		58.5	(36%-105%)			
Acenaphthylene	1660			993	ug/kg		59.7	(38%-103%)			
Acetophenone	1660			930	ug/kg		55.9	(37%-104%)			
Anthracene	1660			986	ug/kg		59.3	(43%-104%)			
Atrazine	1660			984	ug/kg		59.1	(32%-104%)			
Benzaldehyde	1660			396	ug/kg		23.8	(10%-130%)			
Benzo(a)anthracene	1660			964	ug/kg		58	(46%-108%)			
Benzo(a)pyrene	1660			934	ug/kg		56.2	(45%-109%)			
Benzo(b)fluoranthene	1660			979	ug/kg		58.9	(42%-111%)			
Benzo(ghi)perylene	1660			762	ug/kg		45.8	(43%-115%)			
Benzo(k)fluoranthene	1660			965	ug/kg		58	(43%-103%)			
Butylbenzylphthalate	1660			1050	ug/kg		63	(37%-107%)			
CRESOLS, M & P	1660			1070	ug/kg		64.3	(39%-115%)			
Caprolactam	1660			950	ug/kg		57.1	(39%-114%)			
Carbazole	1660			1230	ug/kg		74.1	(53%-118%)			
Chrysene	1660			966	ug/kg		58.1	(47%-107%)			
Di-n-butylphthalate	1660			1090	ug/kg		65.8	(46%-112%)			

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
Di-n-octylphthalate	1660			1040	ug/kg		62.6	(41%-110%)			
Dibenz(a,h) anthracene	1660			829	ug/kg		49.8	(39%-128%)	RMB	02/27/14	12:29
Dibenzofuran	1660			1010	ug/kg		60.5	(38%-104%)			
Diethylphthalate	1660			1070	ug/kg		64.1	(42%-109%)			
Dimethylphthalate	1660			1030	ug/kg		62.2	(41%-105%)			
Diphenylamine	1660			1070	ug/kg		64.1	(40%-101%)			
Fluoranthene	1660			994	ug/kg		59.7	(44%-106%)			
Fluorene	1660			957	ug/kg		57.5	(39%-102%)			
Hexachlorobenzene	1660			1030	ug/kg		62.2	(41%-108%)			
Hexachlorobutadiene	1660			981	ug/kg		59	(32%-104%)			
Hexachlorocyclopentadiene	1660			379	ug/kg		22.8*	(24%-84%)			
Hexachloroethane	1660			913	ug/kg		54.9	(34%-98%)			
Indeno(1,2,3-cd)pyrene	1660			955	ug/kg		57.4	(45%-115%)			
Isophorone	1660			1100	ug/kg		66.2	(36%-98%)			
N-Nitroso-di-n-propylamine	1660			1020	ug/kg		61.1	(34%-106%)			
Naphthalene	1660			969	ug/kg		58.2	(38%-106%)			
Nitrobenzene	1660			1060	ug/kg		63.6	(35%-99%)			
Pentachlorophenol	1660			524	ug/kg		31.5	(31%-93%)			
Phenanthrene	1660			998	ug/kg		60	(43%-105%)			
Phenol	1660			933	ug/kg		56.1	(38%-98%)			
Pyrene	1660			989	ug/kg		59.4	(33%-99%)			
bis(2-Chloroethoxy)methane	1660			1060	ug/kg		63.8	(37%-98%)			

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
bis(2-Chloroethyl) ether	1660			959	ug/kg		57.7	(35%-96%)			
bis(2-Ethylhexyl)phthalate	1660			1040	ug/kg		62.5	(41%-104%)	RMB	02/27/14	12:29
**2,4,6-Tribromophenol	3330			2030	ug/kg		61.1	(20%-122%)			
**2-Fluorobiphenyl	1660			963	ug/kg		57.9	(25%-100%)			
**2-Fluorophenol	3330			1870	ug/kg		56.2	(23%-107%)			
**Nitrobenzene-d5	1660			1040	ug/kg		62.4	(21%-103%)			
**PHENOL-D6	3330			1880	ug/kg		56.4	(25%-108%)			
**Terphenyl-d14	1660			1010	ug/kg		60.7	(31%-124%)			
QC1203041530	MB										
1,1'-Biphenyl			U	ND	ug/kg					02/27/14	11:57
1,2,4,5-TETRACHLOROBENZENE			U	ND	ug/kg						
2,4,5-Trichlorophenol			U	ND	ug/kg						
2,4,6-Trichlorophenol			U	ND	ug/kg						
2,4-Dichlorophenol			U	ND	ug/kg						
2,4-Dimethylphenol			U	ND	ug/kg						
2,4-Dinitrophenol			U	ND	ug/kg						
2,4-Dinitrotoluene			U	ND	ug/kg						
2,6-Dinitrotoluene			U	ND	ug/kg						
2-Chloronaphthalene			U	ND	ug/kg						
2-Chlorophenol			U	ND	ug/kg						
2-Methylnaphthalene			U	ND	ug/kg						
2-Methylphenol			U	ND	ug/kg						
2-Nitroaniline			U	ND	ug/kg						

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
2-Nitrophenol			U	ND	ug/kg				RMB	02/27/14	11:57
3,3'-Dichlorobenzidine			U	ND	ug/kg						
3-Nitroaniline			U	ND	ug/kg						
4,6-Dinitro-2-methylphenol			U	ND	ug/kg						
4-Bromophenyl-phenylether			U	ND	ug/kg						
4-Chloro-3-methylphenol			U	ND	ug/kg						
4-Chloroaniline			U	ND	ug/kg						
4-Chlorophenyl-phenylether			U	ND	ug/kg						
4-Nitroaniline			U	ND	ug/kg						
4-Nitrophenol			U	ND	ug/kg						
Acenaphthene			U	ND	ug/kg						
Acenaphthylene			U	ND	ug/kg						
Acetophenone			U	ND	ug/kg						
Anthracene			U	ND	ug/kg						
Atrazine			U	ND	ug/kg						
Benzaldehyde			U	ND	ug/kg						
Benzo(a)anthracene			U	ND	ug/kg						
Benzo(a)pyrene			U	ND	ug/kg						
Benzo(b)fluoranthene			U	ND	ug/kg						
Benzo(ghi)perylene			U	ND	ug/kg						
Benzo(k)fluoranthene			U	ND	ug/kg						

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
Butylbenzylphthalate			U	ND	ug/kg						
CRESOLS, M & P			U	ND	ug/kg				RMB	02/27/14	11:57
Caprolactam			U	ND	ug/kg						
Carbazole			U	ND	ug/kg						
Chrysene			U	ND	ug/kg						
Di-n-butylphthalate			U	ND	ug/kg						
Di-n-octylphthalate			U	ND	ug/kg						
Dibenz(a,h) anthracene			U	ND	ug/kg						
Dibenzofuran			U	ND	ug/kg						
Diethylphthalate			U	ND	ug/kg						
Dimethylphthalate			U	ND	ug/kg						
Diphenylamine			U	ND	ug/kg						
Fluoranthene			U	ND	ug/kg						
Fluorene			U	ND	ug/kg						
Hexachlorobenzene			U	ND	ug/kg						
Hexachlorobutadiene			U	ND	ug/kg						
Hexachlorocyclopentadiene			U	ND	ug/kg						
Hexachloroethane			U	ND	ug/kg						
Indeno(1,2,3-cd)pyrene			U	ND	ug/kg						
Isophorone			U	ND	ug/kg						
N-Nitroso-di-n-propylamine			U	ND	ug/kg						
Naphthalene			U	ND	ug/kg						

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QC Summary

Workorder: 343609

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
Nitrobenzene			U	ND	ug/kg						
Pentachlorophenol			U	ND	ug/kg				RMB	02/27/14	11:57
Phenanthrene			U	ND	ug/kg						
Phenol			U	ND	ug/kg						
Pyrene			U	ND	ug/kg						
bis(2-Chloroethoxy)methane			U	ND	ug/kg						
bis(2-Chloroethyl) ether			U	ND	ug/kg						
bis(2-Ethylhexyl)phthalate			U	ND	ug/kg						
**2,4,6-Tribromophenol	3330			2030	ug/kg		60.9	(20%-122%)			
**2-Fluorobiphenyl	1670			1160	ug/kg		69.8	(25%-100%)			
**2-Fluorophenol	3330			2100	ug/kg		63	(23%-107%)			
**Nitrobenzene-d5	1670			1220	ug/kg		73.4	(21%-103%)			
**PHENOL-D6	3330			2130	ug/kg		63.8	(25%-108%)			
**Terphenyl-d14	1670			1250	ug/kg		75.3	(31%-124%)			
QC1203041532 343609001 MS											
1,1'-Biphenyl	1830	U	ND	1120	ug/kg		61.2	(27%-111%)		02/27/14	15:05
1,2,4,5-TETRACHLOROBENZENE	1830	U	ND	1010	ug/kg		55.2	(24%-115%)			
2,4,5-Trichlorophenol	1830	U	ND	1430	ug/kg		78.3	(38%-109%)			
2,4,6-Trichlorophenol	1830	U	ND	1330	ug/kg		72.6	(32%-103%)			
2,4-Dichlorophenol	1830	U	ND	1240	ug/kg		67.7	(31%-103%)			
2,4-Dimethylphenol	1830	U	ND	1110	ug/kg		60.6	(30%-109%)			
2,4-Dinitrophenol	1830	U	ND	484	ug/kg	J	26.4	(19%-101%)			
2,4-Dinitrotoluene	1830	U	ND	1500	ug/kg		81.6	(36%-115%)			

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
2,6-Dinitrotoluene	1830	U	ND	1320	ug/kg		71.9	(36%-107%)	RMB	02/27/14	15:05
2-Chloronaphthalene	1830	U	ND	1160	ug/kg		63.5	(27%-109%)			
2-Chlorophenol	1830	U	ND	1100	ug/kg		59.8	(28%-108%)			
2-Methylnaphthalene	1830	U	ND	1190	ug/kg		64.9	(23%-107%)			
2-Methylphenol	1830	U	ND	1120	ug/kg		61	(27%-105%)			
2-Nitroaniline	1830	U	ND	1400	ug/kg		76.5	(37%-114%)			
2-Nitrophenol	1830	U	ND	1180	ug/kg		64.2	(24%-106%)			
3,3'-Dichlorobenzidine	1830	U	ND	783	ug/kg		42.7	(28%-105%)			
3-Nitroaniline	1830	U	ND	1150	ug/kg		62.8	(31%-110%)			
4,6-Dinitro-2-methylphenol	1830	U	ND	996	ug/kg		54.4	(14%-116%)			
4-Bromophenyl-phenylether	1830	U	ND	1500	ug/kg		81.8	(37%-112%)			
4-Chloro-3-methylphenol	1830	U	ND	1440	ug/kg		78.4	(32%-112%)			
4-Chloroaniline	1830	U	ND	1030	ug/kg		56.5	(27%-100%)			
4-Chlorophenyl-phenylether	1830	U	ND	1300	ug/kg		71.1	(37%-110%)			
4-Nitroaniline	1830	U	ND	1630	ug/kg		89.1	(36%-141%)			
4-Nitrophenol	1830	U	ND	1360	ug/kg		74.3	(12%-128%)			
Acenaphthene	1830	U	ND	1170	ug/kg		64.1	(28%-102%)			
Acenaphthylene	1830	U	ND	1230	ug/kg		67.4	(32%-103%)			
Acetophenone	1830	U	ND	1070	ug/kg		58.2	(27%-110%)			
Anthracene	1830	U	ND	1460	ug/kg		79.6	(36%-104%)			
Atrazine	1830	U	ND	1470	ug/kg		80.1	(28%-107%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
Benzaldehyde	1830	U	ND	1130	ug/kg		62	(17%-101%)			
Benzo(a)anthracene	1830	J	30.1	1530	ug/kg		81.9	(27%-120%)	RMB	02/27/14	15:05
Benzo(a)pyrene	1830	J	19.9	1500	ug/kg		80.6	(31%-116%)			
Benzo(b)fluoranthene	1830	J	34.1	1650	ug/kg		88.5	(30%-119%)			
Benzo(ghi)perylene	1830	U	ND	1050	ug/kg		57.3	(30%-109%)			
Benzo(k)fluoranthene	1830	J	18.6	1560	ug/kg		84.3	(31%-125%)			
Butylbenzylphthalate	1830	U	ND	1680	ug/kg		91.8	(33%-121%)			
CRESOLS, M & P	1830	U	ND	1260	ug/kg		69	(32%-123%)			
Caprolactam	1830	U	ND	1490	ug/kg		81.6	(29%-126%)			
Carbazole	1830	U	ND	1830	ug/kg		100	(40%-133%)			
Chrysene	1830	J	20.8	1540	ug/kg		82.8	(33%-114%)			
Di-n-butylphthalate	1830	U	ND	1570	ug/kg		85.5	(42%-119%)			
Di-n-octylphthalate	1830	U	ND	1610	ug/kg		87.7	(36%-115%)			
Dibenz(a,h) anthracene	1830	U	ND	1190	ug/kg		65.1	(26%-128%)			
Dibenzofuran	1830	U	ND	1260	ug/kg		69	(28%-117%)			
Diethylphthalate	1830	U	ND	1410	ug/kg		77.1	(40%-113%)			
Dimethylphthalate	1830	U	ND	1260	ug/kg		68.8	(38%-110%)			
Diphenylamine	1830	U	ND	1570	ug/kg		85.6	(34%-111%)			
Fluoranthene	1830	J	43.0	1360	ug/kg		72	(32%-115%)			
Fluorene	1830	U	ND	1250	ug/kg		68.5	(30%-115%)			
Hexachlorobenzene	1830	U	ND	1400	ug/kg		76.6	(34%-111%)			
Hexachlorobutadiene	1830	U	ND	872	ug/kg		47.6	(24%-105%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
Hexachlorocyclopentadiene	1830	U	ND U	ND	ug/kg		0*	(12%-106%)			
Hexachloroethane	1830	U	ND	505	ug/kg		27.5	(24%-102%)	RMB	02/27/14	15:05
Indeno(1,2,3-cd)pyrene	1830	U	ND	1380	ug/kg		75.3	(29%-117%)			
Isophorone	1830	U	ND	1280	ug/kg		69.7	(24%-108%)			
N-Nitroso-di-n-propylamine	1830	U	ND U	ND	ug/kg		0*	(23%-117%)			
Naphthalene	1830	U	ND	1090	ug/kg		59.6	(21%-107%)			
Nitrobenzene	1830	U	ND	1230	ug/kg		67.1	(25%-104%)			
Pentachlorophenol	1830	U	ND	1210	ug/kg		66.1	(22%-108%)			
Phenanthrene	1830	J	19.5	1470	ug/kg		79.1	(28%-119%)			
Phenol	1830	U	ND	1230	ug/kg		67.2	(28%-108%)			
Pyrene	1830		49.2	1640	ug/kg		86.8	(25%-119%)			
bis(2-Chloroethoxy)methane	1830	U	ND	1240	ug/kg		67.8	(27%-104%)			
bis(2-Chloroethyl) ether	1830	U	ND	1010	ug/kg		55.4	(25%-102%)			
bis(2-Ethylhexyl)phthalate	1830	J	370	1950	ug/kg		86	(33%-124%)			
**2,4,6-Tribromophenol	3660		2940	3030	ug/kg		82.7	(20%-122%)			
**2-Fluorobiphenyl	1830		1150	1110	ug/kg		60.8	(25%-100%)			
**2-Fluorophenol	3660		2040	2170	ug/kg		59.2	(23%-107%)			
**Nitrobenzene-d5	1830		1090	1130	ug/kg		61.7	(21%-103%)			
**PHENOL-D6	3660		2110	2200	ug/kg		59.9	(25%-108%)			
**Terphenyl-d14	1830		1840	1640	ug/kg		89.7	(31%-124%)			
QC1203041533 343609001 MSD											
1,1'-Biphenyl	1830	U	ND	1160	ug/kg	3.15	63.2	(0%-30%)		02/27/14	15:37
1,2,4,5-TETRACHLOROBENZENE	1830	U	ND	1030	ug/kg	1.74	56.2	(0%-30%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
2,4,5-Trichlorophenol	1830	U	ND	1400	ug/kg	2.64	76.3	(0%-30%)	RMB	02/27/14	15:37
2,4,6-Trichlorophenol	1830	U	ND	1330	ug/kg	0.0815	72.5	(0%-30%)			
2,4-Dichlorophenol	1830	U	ND	1180	ug/kg	4.51	64.7	(0%-30%)			
2,4-Dimethylphenol	1830	U	ND	1130	ug/kg	1.85	61.8	(0%-30%)			
2,4-Dinitrophenol	1830	U	ND J	229	ug/kg	71.6*	12.5*	(0%-30%)			
2,4-Dinitrotoluene	1830	U	ND	1470	ug/kg	1.59	80.4	(0%-30%)			
2,6-Dinitrotoluene	1830	U	ND	1280	ug/kg	2.99	69.8	(0%-30%)			
2-Chloronaphthalene	1830	U	ND	1160	ug/kg	0.0427	63.5	(0%-30%)			
2-Chlorophenol	1830	U	ND	1140	ug/kg	4.01	62.3	(0%-30%)			
2-Methylnaphthalene	1830	U	ND	1240	ug/kg	4.62	68	(0%-30%)			
2-Methylphenol	1830	U	ND	1160	ug/kg	4.09	63.6	(0%-30%)			
2-Nitroaniline	1830	U	ND	1390	ug/kg	0.657	76	(0%-30%)			
2-Nitrophenol	1830	U	ND	1080	ug/kg	8.61	58.9	(0%-30%)			
3,3'-Dichlorobenzidine	1830	U	ND	1150	ug/kg	38.3*	63.1	(0%-30%)			
3-Nitroaniline	1830	U	ND	1370	ug/kg	17.1	74.6	(0%-30%)			
4,6-Dinitro-2-methylphenol	1830	U	ND	543	ug/kg	58.9*	29.6	(0%-30%)			
4-Bromophenyl-phenylether	1830	U	ND	1500	ug/kg	0.375	82.2	(0%-30%)			
4-Chloro-3-methylphenol	1830	U	ND	1360	ug/kg	5.15	74.5	(0%-30%)			
4-Chloroaniline	1830	U	ND	1110	ug/kg	6.98	60.6	(0%-30%)			
4-Chlorophenyl-phenylether	1830	U	ND	1320	ug/kg	1.54	72.3	(0%-30%)			
4-Nitroaniline	1830	U	ND	1740	ug/kg	6.22	94.8	(0%-30%)			

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
4-Nitrophenol	1830	U	ND	1170	ug/kg	15.3	63.7	(0%-30%)			
Acenaphthene	1830	U	ND	1190	ug/kg	1.20	64.8	(0%-30%)	RMB	02/27/14	15:37
Acenaphthylene	1830	U	ND	1230	ug/kg	0.508	67.1	(0%-30%)			
Acetophenone	1830	U	ND	1120	ug/kg	5.08	61.3	(0%-30%)			
Anthracene	1830	U	ND	1520	ug/kg	3.89	82.8	(0%-30%)			
Atrazine	1830	U	ND	1550	ug/kg	5.53	84.7	(0%-30%)			
Benzaldehyde	1830	U	ND	1220	ug/kg	6.91	66.4	(0%-30%)			
Benzo(a)anthracene	1830	J	30.1	1580	ug/kg	3.50	84.9	(0%-30%)			
Benzo(a)pyrene	1830	J	19.9	1550	ug/kg	3.58	83.6	(0%-30%)			
Benzo(b)fluoranthene	1830	J	34.1	1720	ug/kg	3.69	91.9	(0%-30%)			
Benzo(ghi)perylene	1830	U	ND	1090	ug/kg	3.45	59.3	(0%-30%)			
Benzo(k)fluoranthene	1830	J	18.6	1580	ug/kg	1.34	85.5	(0%-30%)			
Butylbenzylphthalate	1830	U	ND	1790	ug/kg	6.39	97.9	(0%-30%)			
CRESOLS, M & P	1830	U	ND	1340	ug/kg	5.68	73.1	(0%-30%)			
Caprolactam	1830	U	ND	1490	ug/kg	0.431	81.3	(0%-30%)			
Carbazole	1830	U	ND	1850	ug/kg	0.665	101	(0%-30%)			
Chrysene	1830	J	20.8	1600	ug/kg	3.65	86	(0%-30%)			
Di-n-butylphthalate	1830	U	ND	1640	ug/kg	4.41	89.4	(0%-30%)			
Di-n-octylphthalate	1830	U	ND	1630	ug/kg	1.47	89	(0%-30%)			
Dibenz(a,h) anthracene	1830	U	ND	1300	ug/kg	8.87	71.1	(0%-30%)			
Dibenzofuran	1830	U	ND	1280	ug/kg	1.47	70	(0%-30%)			
Diethylphthalate	1830	U	ND	1460	ug/kg	3.40	79.7	(0%-30%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
Dimethylphthalate	1830	U	ND	1280	ug/kg	1.76	70.1	(0%-30%)			
Diphenylamine	1830	U	ND	1580	ug/kg	0.806	86.4	(0%-30%)	RMB	02/27/14	15:37
Fluoranthene	1830	J	43.0	1420	ug/kg	4.22	75.2	(0%-30%)			
Fluorene	1830	U	ND	1270	ug/kg	1.04	69.2	(0%-30%)			
Hexachlorobenzene	1830	U	ND	1470	ug/kg	4.93	80.5	(0%-30%)			
Hexachlorobutadiene	1830	U	ND	919	ug/kg	5.24	50.2	(0%-30%)			
Hexachlorocyclopentadiene	1830	U	ND U	ND	ug/kg	N/A	0*	(0%-30%)			
Hexachloroethane	1830	U	ND	591	ug/kg	15.7	32.3	(0%-30%)			
Indeno(1,2,3-cd)pyrene	1830	U	ND	1500	ug/kg	8.68	82.2	(0%-30%)			
Isophorone	1830	U	ND	1290	ug/kg	0.793	70.3	(0%-30%)			
N-Nitroso-di-n-propylamine	1830	U	ND	1250	ug/kg	200*	68.2	(0%-30%)			
Naphthalene	1830	U	ND	1110	ug/kg	2.07	60.8	(0%-30%)			
Nitrobenzene	1830	U	ND	1240	ug/kg	0.823	67.7	(0%-30%)			
Pentachlorophenol	1830	U	ND	849	ug/kg	35.1*	46.4	(0%-30%)			
Phenanthrene	1830	J	19.5	1570	ug/kg	6.84	84.8	(0%-30%)			
Phenol	1830	U	ND	1270	ug/kg	2.95	69.3	(0%-30%)			
Pyrene	1830		49.2	2020	ug/kg	20.6	107	(0%-30%)			
bis(2-Chloroethoxy)methane	1830	U	ND	1230	ug/kg	0.597	67.4	(0%-30%)			
bis(2-Chloroethyl) ether	1830	U	ND	1110	ug/kg	8.73	60.5	(0%-30%)			
bis(2-Ethylhexyl)phthalate	1830	J	370	2040	ug/kg	4.89	91.3	(0%-30%)			
**2,4,6-Tribromophenol	3660		2940	2940	ug/kg		80.3	(20%-122%)			
**2-Fluorobiphenyl	1830		1150	1120	ug/kg		61.3	(25%-100%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1369009										
**2-Fluorophenol	3660	2040		2210	ug/kg		60.3	(23%-107%)			
**Nitrobenzene-d5	1830	1090		1170	ug/kg		63.7	(21%-103%)	RMB	02/27/14	15:37
**PHENOL-D6	3660	2110		2270	ug/kg		62	(25%-108%)			
**Terphenyl-d14	1830	1840		1910	ug/kg		104	(31%-124%)			

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B The target analyte was detected in the associated blank.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- JNX Non Calibrated Compound
- N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UJ Compound cannot be extracted
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

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<u>Parmname</u>	<u>NOM</u>	<u>Sample</u>	<u>Qual</u>	<u>QC</u>	<u>Units</u>	<u>RPD%</u>	<u>REC%</u>	<u>Range</u>	<u>Anlst</u>	<u>Date</u>	<u>Time</u>
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h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 28-FEB-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: SEMIVOA GC/MS	Test / Method: SW846 3541/8270D	Matrix Type: Solid	Client Code: TETR
Batch ID: 1369009	Sample Numbers: See Below		

Potentially affected work order(s)(SDG): 343609

Application Issues:

- Failed Recovery for MS/PS
- Failed RPD for MS/MSD, or PS/PSD
- Failed Recovery for LCS/LCSD
- Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:

1. The LCS(1203041531) recovered Hexachlorocyclopentadiene at 22.8%. The limits are 24%-84%.
2. The MS(1203041532) recovered Hexachlorocyclopentadiene at 0% (limits are 12%-106%) and N-Nitrosodipropylamine at 0% (limits are 23%-117%).
3. The MSD(1203041533) recovered Hexachlorocyclopentadiene at 0% (limits are 12%-106%) and 2,4-Dinitrophenol at 12.5% (limits are 19%-101%).
4. The MS(1203041532)/MSD(1203041533) RPD values for 2,4-Dinitrophenol, 2-Methyl-4,6-dinitrophenol, 3,3'-Dichlorobenzidine, N-Nitrosodipropylamine and Pentachlorophenol were outside of the acceptance criteria. Please see the QC Summary report for specific failures.

DER Disposition:

1. Hexachlorocyclopentadiene is known to be a poor responding analyte that is subject to thermal decomposition as stated in the Method. This may account for the low recovery of the analyte in the LCS, as well as the zero percent recoveries in the MS and MSD. The data results have been reported.
- 2., 3. Hexachlorocyclopentadiene is known to be a poor responding analyte that is subject to thermal decomposition as stated in the Method. This may account for the zero percent recoveries in the MS and MSD, as well as the low recovery of the analyte in the LCS. Since both the MS and MSD displayed failures and the sample data chromatograms displayed excessive matrix interference, the failures were attributed to sample matrix interference and the data results have been reported.
4. The failures were attributed to matrix interference and the data results have been reported.

Originator's Name:

Richard Bomar 28-FEB-14

Data Validator/Group Leader:

Barbara Bailey 06-MAR-14

PCB Analysis

Case Narrative

**PCB Case Narrative
Tetra Tech, Inc. (TETR)
SDG 343609**

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD
Analytical Method: SW846 3541/8082A
Prep Method: SW846 3541
Analytical Batch Number: 1369224
Prep Batch Number: 1369223

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3541/8082A:

Sample ID	Client ID
343609001	SFRA-3
1203042000	Method Blank (MB)
1203042001	Laboratory Control Sample (LCS)
1203042002	343614001(EWLCP2TV2) Matrix Spike (MS)
1203042003	343614001(EWLCP2TV2) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-040 REV# 20.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV or CCV) met the acceptance criteria. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for the samples in this SDG in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

A non TETR sample of similar matrix was selected for the matrix spike and matrix spike duplicate analysis for this batch of the samples.

Matrix Spike (MS) Recovery Statement

The MS recoveries were not within the established acceptance limits due to dilution and multiple Aroclors in the parent sample, which interfered with spiked Aroclors.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were not within the established acceptance limits due to dilution and multiple Aroclors in the parent sample, which interfered with spiked Aroclors.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD did not meet the acceptance limits due to dilution and multiple Aroclors detected in the parent sample.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns. All sample extracts were cleaned using alumina. Additionally, copper was added to all sample extracts to remove sulfur.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this batch.

Miscellaneous Information

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A DER was not required for the samples in this SDG in this batch.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

The front column has been chosen as the primary column. The data are reported from the front column for all samples in this batch.

System Configuration

The Semi-Volatiles-PCB analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD9A.I_1	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 1	30m x 0.25mm, 0.25um
ECD9A.I_2	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 2	30m x 0.25mm, 0.20um

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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Qualifier Definition Report for

TETR055 Tetra Tech, Inc. (Contract#)
Client SDG: 343609 GEL Work Order: 343609

The Qualifiers in this report are defined as follows:

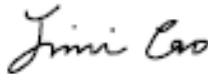
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Jimin Cao

Date: 04 MAR 2014

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 3, 2014

Company : Seagull Environmental Technologies, Inc.
Address : 20 James Town Farm Drive

Florissant, Missouri 63034

Contact: Mr. Dave Kinroth
Project: Strecker Forest Removal

Client Sample ID: SFRA-3	Project: TETR00055
Sample ID: 343609001	Client ID: TETR055
Matrix: Soil	
Collect Date: 13-FEB-14 10:02	
Receive Date: 18-FEB-14	
Collector: Client	
Moisture: 9.06%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"											
Aroclor-1016	U	ND	1.21	3.63	ug/kg	1	YS1	02/28/14	0742	1369224	1
Aroclor-1221	U	ND	1.21	3.63	ug/kg	1					
Aroclor-1232	U	ND	1.21	3.63	ug/kg	1					
Aroclor-1242		6.07	1.21	3.63	ug/kg	1					
Aroclor-1248	U	ND	1.21	3.63	ug/kg	1					
Aroclor-1254	P	5.81	1.21	3.63	ug/kg	1					
Aroclor-1260	U	ND	1.21	3.63	ug/kg	1					
Aroclor-1262	U	ND	1.21	3.63	ug/kg	1					
Aroclor-1268	U	ND	1.21	3.63	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	CXR2	02/27/14	1030	1369223

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.33 ug/kg	7.26	73.4	(44%-106%)
DECACHLOROBIPHENYL	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.95 ug/kg	7.26	82.0	(35%-119%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 3, 2014

Page 1 of 3

Seagull Environmental Technologies, Inc.
20 James Town Farm Drive
Florissant, Missouri

Contact: Mr. Dave Kinroth

Workorder: 343609

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1369224										
QC1203042001	LCS										
Aroclor-1016	33.2			27.1	ug/kg		81.7	(39%-120%)	YS1	02/28/14	07:30
Aroclor-1260	33.2			29.7	ug/kg		89.6	(50%-116%)			
**4cmx	6.63			5.89	ug/kg		88.8	(44%-106%)			
**DECACHLOROBIPHENYL	6.63			6.19	ug/kg		93.3	(35%-119%)			
QC1203042000	MB										
Aroclor-1016			U	ND	ug/kg					02/28/14	07:19
Aroclor-1221			U	ND	ug/kg						
Aroclor-1232			U	ND	ug/kg						
Aroclor-1242			U	ND	ug/kg						
Aroclor-1248			U	ND	ug/kg						
Aroclor-1254			U	ND	ug/kg						
Aroclor-1260			U	ND	ug/kg						
Aroclor-1262			U	ND	ug/kg						
Aroclor-1268			U	ND	ug/kg						
**4cmx	6.64			5.18	ug/kg		78.1	(44%-106%)			
**DECACHLOROBIPHENYL	6.64			5.74	ug/kg		86.5	(35%-119%)			
QC1203042002	343614001	MS									
Aroclor-1016	43.0	U	ND	722	ug/kg		1680 *	(25%-125%)		02/28/14	08:10
Aroclor-1260	43.0		110	262	ug/kg		353 *	(28%-127%)			
**4cmx	8.59		5.19	7.71	ug/kg		89.7	(44%-106%)			
**DECACHLOROBIPHENYL	8.59		7.06	7.19	ug/kg		83.7	(35%-119%)			

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QC Summary

Workorder: 343609

Page 2 of 3

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1369224										
QC1203042003	343614001	MSD									
Aroclor-1016	42.9	U	ND	190	ug/kg	117*	442*	(0%-30%)	YS1	02/28/14	08:25
Aroclor-1260	42.9		110	126	ug/kg	70.1*	36.4	(0%-30%)			
**4cmx	8.57		5.19	6.11	ug/kg		71.2	(44%-106%)			
**DECACHLOROBIPHENYL	8.57		7.06	7.55	ug/kg		88	(35%-119%)			

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B The target analyte was detected in the associated blank.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- JNX Non Calibrated Compound
- N Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N/A RPD or %Recovery limits do not apply.
- NI See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UJ Compound cannot be extracted
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound

GEL LABORATORIES LLC

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QC Summary

Workorder: 343609

Page 3 of 3

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
----------	-----	--------	------	----	-------	------	------	-------	-------	------	------

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Metals Analysis

Case Narrative

**Metals Fractional Narrative
Tetra Tech, Inc. (TETR)
SDG 343609**

Sample Analysis

Sample ID	Client ID
343609001	SFRA-3
1203041859	Method Blank (MB) ICP
1203041860	Laboratory Control Sample (LCS)
1203041863	343609001(SFRA-3L) Serial Dilution (SD)
1203041861	343609001(SFRA-3D) Sample Duplicate (DUP)
1203041862	343609001(SFRA-3S) Matrix Spike (MS)
1203041463	Method Blank (MB) CVAA
1203041464	Laboratory Control Sample (LCS)
1203041467	342966001(WST36-14-54961L) Serial Dilution (SD)
1203041465	342966001(WST36-14-54961D) Sample Duplicate (DUP)
1203041466	342966001(WST36-14-54961S) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Method/Analysis Information

Analytical Batch:	1369156 and 1368984
Prep Batch :	1369155 and 1368982
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-009 REV# 22 and GL-MA-E-010 REV# 27
Analytical Method:	SW846 3050B/6010C and SW846 7471A
Prep Method :	SW846 3050B and SW846 7471A Prep

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 80 mL/min.

Calibration Information

Instrument Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

CRDL Requirements

The CRDL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 343609001 (SFRA-3)-ICP and 342966001 (WST36-14-54961)-CVAA.

Matrix Spike (MS) Recovery Statement

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations that are 25X the IDL/MDL for CVAA, 50X the IDL/MDL for ICP, and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established acceptance criteria.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Dilutions were required for this SDG in order to minimize silver suppression due to matrix interferences.

Preparation Information

The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed

systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Y. Nik-Cole A. Elmore Date: 3.6.14

Sample Data Summary

GEL LABORATORIES LLC

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Qualifier Definition Report for

TETR055 Tetra Tech, Inc. (Contract#)

Client SDG: 343609 GEL Work Order: 343609

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- B Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by

Nick Cole A. Elmore 3.6.14

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 6, 2014

Company : Seagull Environmental Technologies, Inc.
Address : 20 James Town Farm Drive

Florissant, Missouri 63034

Contact: Mr. Dave Kinroth
Project: Strecker Forest Removal

Client Sample ID: SFRA-3	Project: TETR00055
Sample ID: 343609001	Client ID: TETR055
Matrix: Soil	
Collect Date: 13-FEB-14 10:02	
Receive Date: 18-FEB-14	
Collector: Client	
Moisture: 9.06%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA											
7471 Cold Vapor Hg in Solid "Dry Weight Corrected"											
Mercury		28.7	3.89	11.6	ug/kg	1	NOR1	02/27/14	1436	1368984	1
Metals Analysis-ICP											
SW846 3050B/6010C Solid "Dry Weight Corrected"											
Arsenic		4330	549	3290	ug/kg	1	JWJ	03/05/14	2155	1369156	2
Barium		68300	110	549	ug/kg	1					
Cadmium	J	267	110	549	ug/kg	1					
Chromium		9830	165	549	ug/kg	1					
Lead		13000	362	1100	ug/kg	1					
Selenium	J	1240	549	3290	ug/kg	1					
Silver	U	ND	549	2740	ug/kg	5	JWJ	03/06/14	1155	1369156	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3050B	SW846 3050B Prep for 6010C	MTM1	02/28/14	0930	1369155
SW846 7471A Prep	EPA 7471A Mercury Prep Soil	AXS5	02/26/14	1430	1368982

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 7471A	
2	SW846 3050B/6010C	
3	SW846 3050B/6010C	

Notes:

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 6, 2014

Page 1 of 3

Seagull Environmental Technologies, Inc.
20 James Town Farm Drive
Florissant, Missouri

Contact: Mr. Dave Kinroth

Workorder: 343609

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1369156										
QC1203041861	343609001	DUP									
Arsenic		4330		4060	ug/kg	6.37	^	(+/-3290)	JWJ	03/05/14	21:58
Barium		68300		77400	ug/kg	12.5		(0%-20%)			
Cadmium	J	267	J	261	ug/kg	2.14	^	(+/-549)			
Chromium		9830		10400	ug/kg	5.57		(0%-20%)			
Lead		13000		12800	ug/kg	1.03		(0%-20%)			
Selenium	J	1240	J	1780	ug/kg	35.6	^	(+/-3290)			
Silver	U	ND	U	ND	ug/kg	N/A				03/06/14	11:59
QC1203041860	LCS										
Arsenic		48700		48000	ug/kg			98.4 (80%-120%)		03/05/14	21:52
Barium		48700		48800	ug/kg			100 (80%-120%)			
Cadmium		48700		49300	ug/kg			101 (80%-120%)			
Chromium		48700		47800	ug/kg			98 (80%-120%)			
Lead		48700		48500	ug/kg			99.6 (80%-120%)			
Selenium		48700		50600	ug/kg			104 (80%-120%)			
Silver		48700		48700	ug/kg			99.8 (80%-120%)			
QC1203041859	MB										
Arsenic			U	ND	ug/kg					03/05/14	21:48
Barium			U	ND	ug/kg						
Cadmium			U	ND	ug/kg						
Chromium			U	ND	ug/kg						
Lead			U	ND	ug/kg						

GEL LABORATORIES LLC

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QC Summary

Workorder: 343609

Page 2 of 3

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1369156										
Selenium			J	550	ug/kg						
Silver			J	115	ug/kg				JWJ	03/05/14	21:48
QC1203041862	343609001	MS									
Arsenic	54200	4330		55900	ug/kg		95	(75%-125%)		03/05/14	22:01
Barium	54200	68300		125000	ug/kg		104	(75%-125%)			
Cadmium	54200	J	267	50300	ug/kg		92.2	(75%-125%)			
Chromium	54200		9830	62000	ug/kg		96.2	(75%-125%)			
Lead	54200		13000	63200	ug/kg		92.7	(75%-125%)			
Selenium	54200	J	1240	52900	ug/kg		95.3	(75%-125%)			
Silver	54200	U	ND	54200	ug/kg		99.9	(75%-125%)		03/06/14	12:03
QC1203041863	343609001	SDILT									
Arsenic		39.5	J	10.6	ug/L	34.2		(0%-10%)		03/05/14	22:03
Barium		622		119	ug/L	4.09		(0%-10%)			
Cadmium		J	2.43	U	ND	ug/L	N/A	(0%-10%)			
Chromium			89.6	16.2	ug/L	9.41		(0%-10%)			
Lead			118	23.7	ug/L	.546		(0%-10%)			
Selenium		J	11.3	J	7.91	ug/L	250	(0%-10%)			
Silver		U	ND	U	ND	ug/L	N/A	(0%-10%)		03/06/14	12:05
Metals Analysis-Mercury											
Batch	1368984										
QC1203041465	342966001	DUP									
Mercury		17.9		13.6	ug/kg	27.2	^	(+/-13.6)	NOR1	02/27/14	14:29
QC1203041464	LCS										
Mercury	7690			6650	ug/kg		86.4	(80%-120%)		02/27/14	14:26
QC1203041463	MB										
Mercury			U	ND	ug/kg					02/27/14	14:24
QC1203041466	342966001	MS									

GEL LABORATORIES LLC

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QC Summary

Workorder: 343609

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-Mercury											
Batch	1368984										
Mercury	134	17.9		152	ug/kg		101	(80%-120%)		02/27/14	14:31
	QC1203041467 342966001 SDILT										
Mercury		0.264	U	ND	ug/L	N/A		(0%-10%)	NOR1	02/27/14	14:32

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



Clean Harbors, Inc.

Laboratory Test Report

Report ID
201404041237
Friday, April 04, 2014

All results are reported on a wet-weight basis unless otherwise noted.

Client ID LM14-0126

Lab Sample ID KE1473894

SDG 1566

Test *Dioxins/Furans NWW UTS (solids)

Analytical Method: EPA 8280A

Prep Method: EPA 8280A

TCLP Batch ID: NA

Prep Batch ID: E0229-040214

Data Entered By: RoylanceR

Sampling Date: 3/31/2014

Cleanup Batch ID:

Peer Reviewed By: DickersonD

Analysis Date: 4/3/2014

Analysis Batch ID: E0419-040314

Parameter	CAS Nbr	DF	Result	Flag	LOQ	LOD	Test Units	Project Limits
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	1.0	ND		0.250	0.250	ug/kg	0.005 mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	1.0	3.13		0.250	0.250	ug/kg	0.005 mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	1.0	ND		0.250	0.250	ug/kg	0.0025 mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	1.0	ND		0.250	0.250	ug/kg	0.0025 mg/kg
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	1.0	ND		0.250	0.250	ug/kg	0.0025 mg/Kg
Total Hexachlorodibenzofuran (HxCDF)	n/a	1.0	ND		0.250	0.250	ug/kg	0.001 mg/kg
Total Hexachlorodibenzo-p-dioxin (HxCDD)	n/a	1.0	ND		0.250	0.250	ug/kg	0.001 mg/kg
Total Pentachlorodibenzofuran (PeCDF)	n/a	1.0	ND		0.250	0.250	ug/kg	0.001 mg/kg
Total Pentachlorodibenzo-p-dioxin (PeCDD)	n/a	1.0	ND		0.250	0.250	ug/kg	0.001 mg/kg
Total Tetrachlorodibenzofuran (TCDF)	n/a	1.0	ND		0.250	0.250	ug/kg	0.001 mg/kg
Total Tetrachlorodibenzo-p-dioxin (TCDD)	n/a	1.0	ND		0.250	0.250	ug/kg	0.001 mg/kg

Lab Manager
Richard Roylance
(308) 235-8222

2247 South Highway 71 *

Kimball Laboratory
Kimball * NE 69145 US

Test Report Page 3 of 5

Quality Manager
Robert Waite
(308) 235-8204

Report of Analysis

Client Sample ID:	LM14-0126	Date Sampled:	03/31/14
Lab Sample ID:	FA13771-1	Date Received:	04/01/14
Matrix:	SO - Solid	Percent Solids:	78.0
Method:	SW846 8270D SW846 3550C		
Project:	LDR		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X034128.D	1	04/04/14	FS	04/02/14	OP51035	SX1601
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	1100	210	ug/kg	
95-57-8	2-Chlorophenol	ND	210	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	22	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	23	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1100	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	420	84	ug/kg	
95-48-7	2-Methylphenol	ND	210	21	ug/kg	
	3&4-Methylphenol	ND	210	42	ug/kg	
88-75-5	2-Nitrophenol	ND	210	21	ug/kg	
100-02-7	4-Nitrophenol	ND	1100	170	ug/kg	
87-86-5	Pentachlorophenol ^a	ND	1100	170	ug/kg	
108-95-2	Phenol	ND	210	21	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	21	ug/kg	
83-32-9	Acenaphthene	ND	210	27	ug/kg	
208-96-8	Acenaphthylene	ND	210	21	ug/kg	
62-53-3	Aniline	ND	210	21	ug/kg	
120-12-7	Anthracene	ND	210	21	ug/kg	
92-87-5	Benzidine	ND	2100	420	ug/kg	
56-55-3	Benzo(a)anthracene	ND	210	21	ug/kg	
50-32-8	Benzo(a)pyrene	ND	210	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	210	21	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	210	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	210	23	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	210	21	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	210	42	ug/kg	
100-51-6	Benzyl Alcohol	ND	210	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	210	25	ug/kg	
106-47-8	4-Chloroaniline	ND	210	21	ug/kg	
86-74-8	Carbazole	ND	210	21	ug/kg	
218-01-9	Chrysene	ND	210	21	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LM14-0126	Date Sampled:	03/31/14
Lab Sample ID:	FA13771-1	Date Received:	04/01/14
Matrix:	SO - Solid	Percent Solids:	78.0
Method:	SW846 8270D SW846 3550C		
Project:	LDR		

ABN Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
111-91-1	bis(2-Chloroethoxy)methane	ND	210	21	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	210	21	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	210	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	210	31	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	210	21	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	210	24	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	210	21	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	210	21	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	24	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	210	21	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	210	21	ug/kg	
132-64-9	Dibenzofuran	ND	210	21	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	420	42	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	210	42	ug/kg	
84-66-2	Diethyl phthalate	ND	420	42	ug/kg	
131-11-3	Dimethyl phthalate	ND	210	42	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	137	420	42	ug/kg	J
206-44-0	Fluoranthene	ND	210	21	ug/kg	
86-73-7	Fluorene	ND	210	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	210	21	ug/kg	
87-68-3	Hexachlorobutadiene	ND	210	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	210	21	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	210	21	ug/kg	
78-59-1	Isophorone	ND	210	21	ug/kg	
90-12-0	1-Methylnaphthalene	ND	210	21	ug/kg	
91-57-6	2-Methylnaphthalene	ND	210	21	ug/kg	
88-74-4	2-Nitroaniline	ND	210	42	ug/kg	
99-09-2	3-Nitroaniline	ND	210	42	ug/kg	
100-01-6	4-Nitroaniline	ND	210	42	ug/kg	
91-20-3	Naphthalene	ND	210	21	ug/kg	
98-95-3	Nitrobenzene	ND	210	21	ug/kg	
62-75-9	N-Nitrosodimethylamine	ND	210	24	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	210	21	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	21	ug/kg	
85-01-8	Phenanthrene	ND	210	21	ug/kg	
129-00-0	Pyrene	ND	210	21	ug/kg	
110-86-1	Pyridine	ND	420	42	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	210	21	ug/kg	

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LM14-0126	Date Sampled:	03/31/14
Lab Sample ID:	FA13771-1	Date Received:	04/01/14
Matrix:	SO - Solid	Percent Solids:	78.0
Method:	SW846 8270D SW846 3550C		
Project:	LDR		

ABN Full List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	84%		40-102%
4165-62-2	Phenol-d5	91%		41-100%
118-79-6	2,4,6-Tribromophenol	100%		42-108%
4165-60-0	Nitrobenzene-d5	87%		40-105%
321-60-8	2-Fluorobiphenyl	90%		43-107%
1718-51-0	Terphenyl-d14	108%		45-119%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
123-42-2	2-Pentanone, 4-hydroxy-4-methyl- Total TIC, Semi-Volatile	2.44	3700	ug/kg	JN
			3700	ug/kg	J

(a) Associated BS recovery outside control limits.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

April 28, 2014

Emily Fisher
Tetra Tech
415 Oak Street
Kansas City, MO 64106
TEL: (816) 412-1755
FAX:



RE: Strecker Forest RA

WorkOrder: 14041303

Dear Emily Fisher:

TEKLAB, INC received 1 sample on 4/23/2014 7:26:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,



Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com



Report Contents

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

This reporting package includes the following:

Cover Letter	1
Report Contents	2
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Sample Summary	8
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Quality Control Results	10
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Chain of Custody	Appended

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

Abbr Definition

- CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
- DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
- DNI Did not ignite
- DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
- ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
- IDPH IL Dept. of Public Health
- LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
- LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MB Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
- MDL Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
- MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
- MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MW Molecular weight
- ND Not Detected at the Reporting Limit
- NELAP NELAP Accredited
- PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
- RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
- RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
- SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
- Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
- TNTC Too numerous to count (> 200 CFU)

Qualifiers

- | | |
|--|--|
| # - Unknown hydrocarbon | B - Analyte detected in associated Method Blank |
| E - Value above quantitation range | H - Holding times exceeded |
| J - Analyte detected below quantitation limits | M - Manual Integration used to determine area response |
| ND - Not Detected at the Reporting Limit | R - RPD outside accepted recovery limits |
| S - Spike Recovery outside recovery limits | X - Value exceeds Maximum Contaminant Level |



Case Narrative

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

Cooler Receipt Temp: 18.4 °C

Locations and Accreditations

	<u>Collinsville</u>	<u>Springfield</u>	<u>Kansas City</u>	<u>Collinsville Air</u>
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	3920 Pintail Dr Springfield, IL 62711-9415	8421 Nieman Road Lenexa, KS 66214	5445 Horseshoe Lake Road Collinsville, IL 62234-7425
Phone	(618) 344-1004	(217) 698-1004	(913) 541-1998	(618) 344-1004
Fax	(618) 344-1005	(217) 698-1005	(913) 541-1998	(618) 344-1005
Email	jhriley@teklabinc.com	KKlostermann@teklabinc.com	dthompson@teklabinc.com	EHurley@teklabinc.com

<u>State</u>	<u>Dept</u>	<u>Cert #</u>	<u>NELAP</u>	<u>Exp Date</u>	<u>Lab</u>
Illinois	IEPA	100226	NELAP	1/31/2015	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2014	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2014	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2014	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2014	Collinsville
Arkansas	ADEQ	88-0966		3/14/2015	Collinsville
Illinois	IDPH	17584		5/31/2015	Collinsville
Kentucky	UST	0073		1/31/2015	Collinsville
Missouri	MDNR	00930		5/31/2015	Collinsville
Oklahoma	ODEQ	9978		8/31/2014	Collinsville

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

Lab ID: 14041303-001

Client Sample ID: SFRA-25

Matrix: SOLID

Collection Date: 04/23/2014 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
ASTM D4979-95								
Color		0		Brown		1	04/24/2014 9:47	R189911
Layering		0		None		1	04/24/2014 9:47	R189911
Odor		0		Solvent		1	04/24/2014 9:47	R189911
Physical State		0		Soil		1	04/24/2014 9:47	R189911
Turbidity		0		None		1	04/24/2014 9:47	R189911
Viscosity		0		None		1	04/24/2014 9:47	R189911
ASTM D5058-90								
Water Reactivity		0		None		1	04/24/2014 9:47	R189911
Miscibility		0		Immiscible		1	04/24/2014 9:47	R189911
Apparent Density		0		> Water		1	04/24/2014 9:47	R189911
ASTM D92								
Ignitability, Open Cup		60		>200	°F	1	04/25/2014 8:42	R189940
STANDARD METHODS 2540 G								
Total Solids		0.1		72.1	%	1	04/25/2014 11:30	R190003
SW-846 9014 (REACTIVE)								
Cyanide, Reactive	NELAP	2.44		< 2.44	mg/Kg	1	04/28/2014 11:15	98233
SW-846 9034 (REACTIVE)								
Sulfide, Reactive	NELAP	10		< 10	mg/Kg	1	04/25/2014 14:27	98199
SW-846 9045C								
pH (1:1)	NELAP	1		6.59		1	04/24/2014 17:54	R189865
SW-846 9065								
Phenols	NELAP	14.1	S	17.2	mg/Kg	5	04/28/2014 14:52	98235
<i>MS and/or MSD did not recover within control limits due to matrix interference.</i>								
SW-846 9095								
Paint Filter	NELAP	0		Pass	Pass/Fail	1	04/24/2014 9:59	R189910
SW-846 1311, 3010A, 6010B, METALS IN TCLP EXTRACT BY ICP								
Arsenic	NELAP	0.25		< 0.25	mg/L	1	04/28/2014 11:01	98187
Barium	NELAP	0.05		1.49	mg/L	1	04/28/2014 11:01	98187
Cadmium	NELAP	0.02		0.109	mg/L	1	04/28/2014 11:01	98187
Chromium	NELAP	0.1		< 0.1	mg/L	1	04/28/2014 11:01	98187
Lead	NELAP	0.4	J	0.17	mg/L	1	04/28/2014 11:01	98187
Selenium	NELAP	0.5		< 0.5	mg/L	1	04/28/2014 11:01	98187
Silver	NELAP	0.1		< 0.1	mg/L	1	04/28/2014 11:01	98187
SW-846 1311, 7470A IN TCLP EXTRACT								
Mercury	NELAP	0.0002		< 0.0002	mg/L	1	04/25/2014 13:52	98185
SW-846 1311, 3510C, 8081B, CHLORINATED PESTICIDES IN TCLP EXTRACT BY GC/ECD								
alpha-Chlordane	NELAP	0.0005		ND	mg/L	1	04/26/2014 20:59	98186
Chlordane	NELAP	0.005		ND	mg/L	1	04/26/2014 20:59	98186
Endrin	NELAP	0.0005		ND	mg/L	1	04/26/2014 20:59	98186
gamma-BHC	NELAP	0.0005		ND	mg/L	1	04/26/2014 20:59	98186
gamma-Chlordane	NELAP	0.0005		ND	mg/L	1	04/26/2014 20:59	98186
Heptachlor	NELAP	0.0005		ND	mg/L	1	04/26/2014 20:59	98186
Heptachlor epoxide	NELAP	0.0005		ND	mg/L	1	04/26/2014 20:59	98186
Methoxychlor	NELAP	0.0005		ND	mg/L	1	04/26/2014 20:59	98186
Toxaphene	NELAP	0.005		ND	mg/L	1	04/26/2014 20:59	98186
Surr: Decachlorobiphenyl		10-148		87.9	%REC	1	04/26/2014 20:59	98186

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

Lab ID: 14041303-001

Client Sample ID: SFRA-25

Matrix: SOLID

Collection Date: 04/23/2014 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 1311, 3510C, 8081B, CHLORINATED PESTICIDES IN TCLP EXTRACT BY GC/ECD								
Surr: Tetrachloro-m-xylene		20.9-124		74.5	%REC	1	04/26/2014 20:59	98186
SW-846 1311, 3510C, 8151A, CHLORINATED HERBICIDES IN TCLP EXTRACT BY GC/ECD								
2,4,5-TP (Silvex)	NELAP	0.02		ND	mg/L	1	04/26/2014 15:11	98188
2,4-D	NELAP	0.02		ND	mg/L	1	04/26/2014 15:11	98188
Surr: 2,4-Dichlorophenylacetic acid		30.7-120		74	%REC	1	04/26/2014 15:11	98188
SW-846 1311, 3510C, 8270C, SEMI-VOLATILES IN TCLP EXTRACT BY GC/MS								
2,4,5-Trichlorophenol	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
2,4,6-Trichlorophenol	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
2,4-Dinitrotoluene	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
Hexachlorobenzene	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
Hexachlorobutadiene	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
Hexachloroethane	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
m,p-Cresol	NELAP	0.1	J	0.023	mg/L	1	04/28/2014 11:00	98169
Nitrobenzene	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
o-Cresol	NELAP	0.1		ND	mg/L	1	04/28/2014 11:00	98169
Pentachlorophenol	NELAP	0.2		ND	mg/L	1	04/28/2014 11:00	98169
Pyridine	NELAP	0.2		ND	mg/L	1	04/28/2014 11:00	98169
Cresols, Total	NELAP	0.1	J	0.023	mg/L	1	04/28/2014 11:00	98169
Surr: 2,4,6-Tribromophenol		26.4-130		99.7	%REC	1	04/28/2014 11:00	98169
Surr: 2-Fluorobiphenyl		38.3-115		70.9	%REC	1	04/28/2014 11:00	98169
Surr: 2-Fluorophenol		16.5-65		49.6	%REC	1	04/28/2014 11:00	98169
Surr: Nitrobenzene-d5		47.6-107		67.9	%REC	1	04/28/2014 11:00	98169
Surr: Phenol-d5		9.94-41.7		33	%REC	1	04/28/2014 11:00	98169
Surr: p-Terphenyl-d14		65.6-127		86.4	%REC	1	04/28/2014 11:00	98169
SW-846 3550B, 8082, POLYCHLORINATED BIPHENYLS (PCBS) BY GC/ECD								
Aroclor 1016	NELAP	37.2	S	211	µg/Kg	1	04/26/2014 11:59	98118
Aroclor 1221	NELAP	37.2		ND	µg/Kg	1	04/26/2014 11:59	98118
Aroclor 1232	NELAP	37.2		ND	µg/Kg	1	04/26/2014 11:59	98118
Aroclor 1242	NELAP	37.2		ND	µg/Kg	1	04/26/2014 11:59	98118
Aroclor 1248	NELAP	37.2		ND	µg/Kg	1	04/26/2014 11:59	98118
Aroclor 1254	NELAP	37.2		ND	µg/Kg	1	04/26/2014 11:59	98118
Aroclor 1260	NELAP	37.2		157	µg/Kg	1	04/26/2014 11:59	98118
Surr: Decachlorobiphenyl		5-156		70.4	%REC	1	04/26/2014 11:59	98118
Surr: Tetrachloro-meta-xylene		7.35-123		94	%REC	1	04/26/2014 11:59	98118
<i>MS did not recover within control limits due to matrix interference.</i>								
SW-846 9023								
Extractable Organic Halogens (EOX)	NELAP	49.5	S	150	mg/Kg	1	04/28/2014 10:44	98217
<i>MS did not recover within control limits due to matrix interference.</i>								
SW-846 1311, 5030, 8260B, VOLATILE ORGANIC COMPOUNDS IN TCLP EXTRACT BY GC/MS								
1,1-Dichloroethene	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238
1,2-Dichloroethane	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238
1,4-Dichlorobenzene	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238
2-Butanone	NELAP	5		ND	mg/L	100	04/25/2014 14:52	98238
Benzene	NELAP	0.2		ND	mg/L	100	04/25/2014 14:52	98238
Carbon tetrachloride	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238
Chlorobenzene	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238
Chloroform	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238



Laboratory Results

<http://www.teklabinc.com/>

Client: Tetra Tech
Client Project: Strecker Forest RA
Lab ID: 14041303-001
Matrix: SOLID

Work Order: 14041303
Report Date: 28-Apr-14

Client Sample ID: SFRA-25

Collection Date: 04/23/2014 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 1311, 5030, 8260B, VOLATILE ORGANIC COMPOUNDS IN TCLP EXTRACT BY GC/MS								
Tetrachloroethene	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238
Trichloroethene	NELAP	0.5		ND	mg/L	100	04/25/2014 14:52	98238
Vinyl chloride	NELAP	0.2		ND	mg/L	100	04/25/2014 14:52	98238
Surr: 1,2-Dichloroethane-d4		74.7-129		97.6	%REC	100	04/25/2014 14:52	98238
Surr: 4-Bromofluorobenzene		86-119		99.7	%REC	100	04/25/2014 14:52	98238
Surr: Dibromofluoromethane		81.7-123		99.3	%REC	100	04/25/2014 14:52	98238
Surr: Toluene-d8		84.3-114		100.4	%REC	100	04/25/2014 14:52	98238



Sample Summary

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
14041303-001	SFRA-25	Solid	2	04/23/2014 0:00



Dates Report

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
	Test Name				
14041303-001A	SFRA-25	04/23/2014 0:00	04/23/2014 19:26		
	ASTM D4979-95				04/24/2014 9:47
	ASTM D5058-90				04/24/2014 9:47
	ASTM D92				04/25/2014 8:42
	Standard Methods 2540 G				04/25/2014 11:30
	SW-846 1311, 3010A, 6010B, Metals in TCLP Extract by ICP			04/25/2014 10:20	04/28/2014 11:01
	SW-846 1311, 3510C, 8081B, Chlorinated Pesticides in TCLP Extract by GC/ECD			04/25/2014 10:16	04/26/2014 20:59
	SW-846 1311, 3510C, 8151A, Chlorinated Herbicides in TCLP Extract by GC/ECD			04/25/2014 10:30	04/26/2014 15:11
	SW-846 1311, 3510C, 8270C, Semi-Volatiles in TCLP Extract by GC/MS			04/25/2014 9:50	04/28/2014 11:00
	SW-846 1311, 5030, 8260B, Volatile Organic Compounds in TCLP Extract by GC/MS				04/25/2014 14:52
	SW-846 1311, 7470A in TCLP Extract			04/25/2014 10:10	04/25/2014 13:52
	SW-846 3550B, 8082, PolyChlorinated Biphenyls (PCBs) by GC/ECD			04/24/2014 10:34	04/26/2014 11:59
	SW-846 9014 (Reactive)			04/28/2014 8:45	04/28/2014 11:15
	SW-846 9023			04/28/2014 8:26	04/28/2014 10:44
	SW-846 9034 (Reactive)			04/25/2014 10:35	04/25/2014 14:27
	SW-846 9045C				04/24/2014 17:54
	SW-846 9065			04/28/2014 11:15	04/28/2014 14:52
	SW-846 9095				04/24/2014 9:59



Quality Control Results

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

ASTM D92

Batch R189940		SampType: DUP		Units °F				RPD Limit 5		Date Analyzed
SampID: 14041303-001ADUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
Ignitability, Open Cup	60		>200				0	0.00	04/25/2014	

STANDARD METHODS 2540 G

Batch R189935		SampType: LCS		Units %						Date Analyzed
SampID: LCS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Total Solids	0.1		1	1	0	100	90	110	04/24/2014	

Batch R189935		SampType: LCSQC		Units %						Date Analyzed
SampID: LCSQC										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Total Solids	0.1		1	1	0	100	90	110	04/24/2014	

Batch R190003		SampType: LCS		Units %						Date Analyzed
SampID: LCS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Total Solids	0.1		1	1	0	99	90	110	04/25/2014	

Batch R190003		SampType: LCSQC		Units %						Date Analyzed
SampID: LCSQC										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Total Solids	0.1		1	1	0	99	90	110	04/25/2014	

Batch R190003		SampType: DUP		Units %				RPD Limit 15		Date Analyzed
SampID: 14041303-001A DUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
Total Solids	0.1		71				72.11	1.52	04/25/2014	

SW-846 9014 (REACTIVE)

Batch 98233		SampType: MBLK		Units mg/Kg						Date Analyzed
SampID: MBLK 140428 RCN1										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Cyanide, Reactive	2.5		< 2.5						04/28/2014	

Batch 98233		SampType: LCS		Units mg/Kg						Date Analyzed
SampID: LCS 140428 RCN1										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Cyanide, Reactive	5	J	4	10	0	39.5	38.7	116	04/28/2014	



Quality Control Results

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 9014 (REACTIVE)

Batch 98233		SampType: DUP		Units mg/Kg				RPD Limit 15		Date Analyzed
SampID: 14041303-001ADUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
Cyanide, Reactive	2.51		< 2.51				0	0.00	04/28/2014	

SW-846 9034 (REACTIVE)

Batch 98199		SampType: MBLK		Units mg/Kg				RPD Limit 15		Date Analyzed
SampID: MBLK 140425 RSUL1										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Sulfide, Reactive	10		< 10						04/25/2014	

Batch 98199		SampType: LCS		Units mg/Kg				RPD Limit 10		Date Analyzed
SampID: LCS 140425 RSUL1										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Sulfide, Reactive	10		84	98.4	0	85.4	47.3	109	04/25/2014	

Batch 98199		SampType: DUP		Units mg/Kg				RPD Limit 10		Date Analyzed
SampID: 14041303-001ADUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
Sulfide, Reactive	9.9		< 9.9				0	0.00	04/25/2014	

SW-846 9045C

Batch R189865		SampType: LCS		Units				RPD Limit 10		Date Analyzed
SampID: LCS-R189865										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
pH (1:1)	1		6.96	7	0	99.4	99.1	100.8	04/23/2014	

Batch R189865		SampType: DUP		Units				RPD Limit 10		Date Analyzed
SampID: 14041303-001A										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
pH (1:1)	1		6.59				6.59	0.00	04/24/2014	

SW-846 9065

Batch 98235		SampType: MBLK		Units mg/Kg				RPD Limit 15		Date Analyzed
SampID: MBLK 140428 OOH										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Phenols	2.78		< 2.78	0.05	0	0	0	0	04/28/2014	

Batch 98235		SampType: LCS		Units mg/Kg				RPD Limit 15		Date Analyzed
SampID: LCS 140428 OOH										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Phenols	2.63		10.4	10	0	103.6	90	110	04/28/2014	



Quality Control Results

<http://www.teklabinc.com/>

Client: Tetra Tech
Client Project: Strecker Forest RA

Work Order: 14041303
Report Date: 28-Apr-14

SW-846 9065

Batch 98235		SampType: MS		Units mg/Kg				Date Analyzed	
SampID: 14041303-001AMS									
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Phenols	12.8	S	21	9.894	17.19	38.1	85	115	04/28/2014

Batch 98235		SampType: MSD		Units mg/Kg				RPD Limit 15		Date Analyzed
SampID: 14041303-001AMSD										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Phenols	11.9	S	21.2	9.236	17.19	43.3	20.96	1.09	04/28/2014	

Batch R189910		SampType: DUP		Units Pass/Fail				RPD Limit 0		Date Analyzed
SampID: 14041303-001ADUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Paint Filter	0		Pass				0	0.00	04/24/2014	

SW-846 1311, 3010A, 6010B, METALS IN TCLP EXTRACT BY ICP

Batch 98187		SampType: MBLK		Units mg/L						Date Analyzed
SampID: MBLK-98187										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Arsenic	0.25		< 0.25	0.25	0	0	-100	100	04/28/2014	
Barium	0.5		< 0.5	0.5	0	0	-100	100	04/28/2014	
Cadmium	0.02		< 0.02	0.02	0	0	-100	100	04/28/2014	
Chromium	0.1		< 0.1	0.1	0	0	-100	100	04/28/2014	
Lead	0.4		< 0.4	0.4	0	0	-100	100	04/28/2014	
Selenium	0.5		< 0.5	0.5	0	0	-100	100	04/28/2014	
Silver	0.1		< 0.1	0.1	0	0	-100	100	04/28/2014	

Batch 98187		SampType: LCS		Units mg/L						Date Analyzed
SampID: LCS-98187										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Arsenic	0.25		20.2	20	0	100.9	85	115	04/28/2014	
Barium	0.5		19.7	20	0	98.3	85	115	04/28/2014	
Cadmium	0.02		0.495	0.5	0	99	85	115	04/28/2014	
Chromium	0.1		1.98	2	0	99	85	115	04/28/2014	
Lead	0.4		4.95	5	0	99.1	85	115	04/28/2014	
Selenium	0.5		20.1	20	0	100.4	85	115	04/28/2014	
Silver	0.1		0.477	0.5	0	95.4	85	115	04/28/2014	



Quality Control Results

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 3010A, 6010B, METALS IN TCLP EXTRACT BY ICP

Batch 98187		SampType: MS		Units mg/L						
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Arsenic	0.25		19.7	20	0	98.6	75	125	04/28/2014	
Barium	0.5		20.7	20	1.492	96.2	75	125	04/28/2014	
Cadmium	0.02		0.594	0.5	0.109	97	75	125	04/28/2014	
Chromium	0.1		1.94	2	0	97	75	125	04/28/2014	
Lead	0.4		5	5	0.169	96.7	75	125	04/28/2014	
Selenium	0.5		19.5	20	0	97.4	75	125	04/28/2014	
Silver	0.1		0.464	0.5	0	92.8	75	125	04/28/2014	

Batch 98187		SampType: MSD		Units mg/L							RPD Limit 20	
SampID: 14041303-001AMSD												
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed			
Arsenic	0.25		20	20	0	100	19.72	1.36	04/28/2014			
Barium	0.5		21	20	1.492	97.7	20.74	1.44	04/28/2014			
Cadmium	0.02		0.6	0.5	0.109	98.2	0.594	1.01	04/28/2014			
Chromium	0.1		1.97	2	0	98.4	1.94	1.38	04/28/2014			
Lead	0.4		5.06	5	0.169	97.9	5.004	1.17	04/28/2014			
Selenium	0.5		19.8	20	0	99	19.49	1.63	04/28/2014			
Silver	0.1		0.473	0.5	0	94.6	0.464	1.92	04/28/2014			

SW-846 1311, 7470A IN TCLP EXTRACT

Batch 98185		SampType: MBLK		Units mg/L						
SampID: MBLK-98185										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Mercury	0.0002		< 0.0002	0.0002	0	0	-100	100	04/25/2014	

Batch 98185		SampType: LCS		Units mg/L						
SampID: LCS-98185										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Mercury	0.0002		0.00495	0.005	0	99	85	115	04/25/2014	

Batch 98185		SampType: MS		Units mg/L						
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Mercury	0.0002		0.00508	0.005	0	101.6	75	125	04/25/2014	

Batch 98185		SampType: MSD		Units mg/L							RPD Limit 15	
SampID: 14041303-001AMSD												
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed			
Mercury	0.0002		0.00516	0.005	0	103.3	0.005081	1.61	04/25/2014			



Quality Control Results

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 3510C, 8081B, CHLORINATED PESTICIDES IN TCLP EXTRACT BY GC/ECD

Batch 98186		SampType: MBLK		Units µg/L					
SampID: MBLK-98186									
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
alpha-Chlordane	0.05		ND						04/26/2014
Endrin	0.05		ND						04/26/2014
gamma-BHC	0.05		ND						04/26/2014
gamma-Chlordane	0.05		ND						04/26/2014
Heptachlor	0.05		ND						04/26/2014
Heptachlor epoxide	0.05		ND						04/26/2014
Methoxychlor	0.05		ND						04/26/2014
Toxaphene	0.5		ND						04/26/2014
Chlordane	0.5		ND						04/26/2014
Surr: Decachlorobiphenyl			0.18	0.25		71.1	11.3	138	04/26/2014
Surr: Tetrachloro-m-xylene			0.19	0.25		76.4	13	114	04/26/2014

Batch 98186		SampType: MBLK		Units mg/L					
SampID: MBLKTCLP-98159									
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
alpha-Chlordane	0.0005		ND						04/26/2014
Endrin	0.0005		ND						04/26/2014
gamma-BHC	0.0005		ND						04/26/2014
gamma-Chlordane	0.0005		ND						04/26/2014
Heptachlor	0.0005		ND						04/26/2014
Heptachlor epoxide	0.0005		ND						04/26/2014
Methoxychlor	0.0005		ND						04/26/2014
Toxaphene	0.005		ND						04/26/2014
Chlordane	0.005		ND						04/26/2014
Surr: Decachlorobiphenyl			0.00204	0.0025		81.7	25.9	140	04/26/2014
Surr: Tetrachloro-m-xylene			0.00205	0.0025		82	23.7	93	04/26/2014

Batch 98186		SampType: LCS		Units µg/L					
SampID: LCSPST-98186									
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
alpha-Chlordane	0.05		0.17	0.25	0	68.2	50.5	137	04/26/2014
Endrin	0.05		0.21	0.25	0	84.4	47.6	139	04/26/2014
gamma-BHC	0.05		0.19	0.25	0	74.4	47.6	127	04/26/2014
gamma-Chlordane	0.05		0.17	0.25	0	67.3	48.3	138	04/26/2014
Heptachlor	0.05		0.19	0.25	0	75.6	47.8	117	04/26/2014
Heptachlor epoxide	0.05		0.2	0.25	0	78.7	52.6	136	04/26/2014
Methoxychlor	0.05		0.19	0.25	0	75.5	45.3	140	04/26/2014
Surr: Decachlorobiphenyl			0.13	0.25		51.8	9.42	147	04/26/2014
Surr: Tetrachloro-m-xylene			0.17	0.25		69.1	13	114	04/26/2014

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 3510C, 8081B, CHLORINATED PESTICIDES IN TCLP EXTRACT BY GC/ECD

Batch 98186		SampType: LCSD		Units µg/L				RPD Limit 30		
SampID: LCSPSTD-98186										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
alpha-Chlordane	0.05		0.13	0.25	0	51.3	0.1706	28.32	04/26/2014	
Endrin	0.05		0.16	0.25	0	64.1	0.2109	27.36	04/26/2014	
gamma-BHC	0.05		0.16	0.25	0	62.5	0.1861	17.45	04/26/2014	
gamma-Chlordane	0.05		0.13	0.25	0	50.4	0.1683	28.74	04/26/2014	
Heptachlor	0.05	R	0.12	0.25	0	49.3	0.189	42.03	04/26/2014	
Heptachlor epoxide	0.05		0.15	0.25	0	61.8	0.1967	24.02	04/26/2014	
Methoxychlor	0.05		0.15	0.25	0	59.1	0.1888	24.37	04/26/2014	
Surr: Decachlorobiphenyl			0.11	0.25		44.9			04/26/2014	
Surr: Tetrachloro-m-xylene			0.15	0.25		58.5			04/26/2014	

Batch 98186		SampType: MS		Units mg/L				RPD Limit 30		
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
alpha-Chlordane	0.0005		0.00207	0.0025	0	83	51.6	128	04/26/2014	
Endrin	0.0005		0.00256	0.0025	0	102.3	63.7	142	04/26/2014	
gamma-BHC	0.0005		0.00188	0.0025	0	75.4	53.4	131	04/26/2014	
gamma-Chlordane	0.0005		0.00203	0.0025	0	81.3	43.2	137	04/26/2014	
Heptachlor	0.0005		0.00218	0.0025	0	87.4	40.9	121	04/26/2014	
Heptachlor epoxide	0.0005		0.00218	0.0025	0	87.4	56.9	126	04/26/2014	
Methoxychlor	0.0005		0.00243	0.0025	0	97.2	67.4	129	04/26/2014	
Surr: Decachlorobiphenyl			0.00223	0.0025		89.4	10	148	04/26/2014	
Surr: Tetrachloro-m-xylene			0.00187	0.0025		74.8	20.9	124	04/26/2014	

Batch 98186		SampType: MSD		Units mg/L				RPD Limit 30		
SampID: 14041303-001AMSD										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
alpha-Chlordane	0.0005		0.00212	0.0025	0	84.8	0.002075	2.18	04/26/2014	
Endrin	0.0005		0.00258	0.0025	0	103.3	0.002559	0.95	04/26/2014	
gamma-BHC	0.0005		0.00187	0.0025	0	74.7	0.001885	0.94	04/26/2014	
gamma-Chlordane	0.0005		0.00208	0.0025	0	83	0.002032	2.14	04/26/2014	
Heptachlor	0.0005		0.00221	0.0025	0	88.4	0.002184	1.16	04/26/2014	
Heptachlor epoxide	0.0005		0.00219	0.0025	0	87.7	0.002185	0.34	04/26/2014	
Methoxychlor	0.0005		0.00246	0.0025	0	98.5	0.002429	1.37	04/26/2014	
Surr: Decachlorobiphenyl			0.00239	0.0025		95.5			04/26/2014	
Surr: Tetrachloro-m-xylene			0.00176	0.0025		70.5			04/26/2014	

SW-846 1311, 3510C, 8151A, CHLORINATED HERBICIDES IN TCLP EXTRACT BY GC/ECD

Batch 98188		SampType: MBLK		Units µg/L				RPD Limit 30		
SampID: MBLK-98188										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
2,4,5-TP (Silvex)	0.4		ND						04/26/2014	
2,4-D	0.4		ND						04/26/2014	
Surr: 2,4-Dichlorophenylacetic acid			0.542	0.8		67.8	15.1	96.2	04/26/2014	

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 3510C, 8151A, CHLORINATED HERBICIDES IN TCLP EXTRACT BY GC/ECD

Batch 98188		SampType: MBLK		Units mg/L						
SampID: MBLK-TCLP98159										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
2,4,5-TP (Silvex)	0.02		ND						04/26/2014	
2,4-D	0.02		ND						04/26/2014	
Surr: 2,4-Dichlorophenylacetic acid			0.033	0.04		82.6	28.8	107	04/26/2014	

Batch 98188		SampType: LCS		Units µg/L						
SampID: LCS-98188										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
2,4,5-TP (Silvex)	0.4		0.618	0.8	0	77.3	42.5	119	04/26/2014	
2,4-D	0.4		0.547	0.8	0	68.4	17.3	139	04/26/2014	
Surr: 2,4-Dichlorophenylacetic acid			0.572	0.8		71.5	9.8	103	04/26/2014	

Batch 98188		SampType: LCSD		Units µg/L				RPD Limit 30		Date Analyzed	
SampID: LCSD-98188											
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed		
2,4,5-TP (Silvex)	0.4		0.672	0.8	0	84	0.6182	8.37	04/26/2014		
2,4-D	0.4		0.588	0.8	0	73.5	0.547	7.24	04/26/2014		
Surr: 2,4-Dichlorophenylacetic acid			0.601	0.8		75.2			04/26/2014		

Batch 98188		SampType: MS		Units mg/L						
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
2,4,5-TP (Silvex)	0.02		0.031	0.04	0	77.3	40	160	04/26/2014	
2,4-D	0.02		0.027	0.04	0	67.7	40	160	04/26/2014	
Surr: 2,4-Dichlorophenylacetic acid			0.025	0.04		63.7	40	160	04/26/2014	

Batch 98188		SampType: MSD		Units mg/L				RPD Limit 30		Date Analyzed	
SampID: 14041303-001AMSD											
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed		
2,4,5-TP (Silvex)	0.02		0.035	0.04	0	86.6	0.0309	11.45	04/26/2014		
2,4-D	0.02		0.031	0.04	0	76.9	0.02706	12.82	04/26/2014		
Surr: 2,4-Dichlorophenylacetic acid			0.03	0.04		74.1			04/26/2014		



Quality Control Results

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Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 3510C, 8270C, SEMI-VOLATILES IN TCLP EXTRACT BY GC/MS

Batch 98169		SampType: MBLK		Units mg/L						
SampID: MBLK-98169										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
2,4,5-Trichlorophenol	0.01		ND						04/25/2014	
2,4,6-Trichlorophenol	0.01		ND						04/25/2014	
2,4-Dinitrotoluene	0.01		ND						04/25/2014	
Hexachlorobenzene	0.01		ND						04/25/2014	
Hexachlorobutadiene	0.01		ND						04/25/2014	
Hexachloroethane	0.01		ND						04/25/2014	
m,p-Cresol	0.01		ND						04/25/2014	
Nitrobenzene	0.01		ND						04/25/2014	
o-Cresol	0.01		ND						04/25/2014	
Pentachlorophenol	0.02		ND						04/25/2014	
Pyridine	0.02		ND						04/25/2014	
Surr: 2,4,6-Tribromophenol			0.052	0.05		104.5	36.9	125	04/25/2014	
Surr: 2-Fluorobiphenyl			0.02	0.025		78.4	36.7	114	04/25/2014	
Surr: 2-Fluorophenol			0.029	0.05		57.7	23.9	78.3	04/25/2014	
Surr: Nitrobenzene-d5			0.018	0.025		71.2	36.6	119	04/25/2014	
Surr: Phenol-d5			0.018	0.05		36.4	14.1	51.6	04/25/2014	
Surr: p-Terphenyl-d14			0.024	0.025		95.7	41.6	133	04/25/2014	

Batch 98169		SampType: LCS		Units mg/L						
SampID: LCS-98169										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
2,4,5-Trichlorophenol	0.01		0.082	0.1	0	82	64.1	118	04/25/2014	
2,4,6-Trichlorophenol	0.01		0.077	0.1	0	76.6	57.9	120	04/25/2014	
2,4-Dinitrotoluene	0.01		0.045	0.05	0	90.1	58.7	120	04/25/2014	
Hexachlorobenzene	0.01		0.085	0.1	0	85	60.2	118	04/25/2014	
Hexachlorobutadiene	0.01		0.064	0.1	0	63.5	36.9	99.5	04/25/2014	
Hexachloroethane	0.01		0.055	0.1	0	55	31.8	92.6	04/25/2014	
m,p-Cresol	0.01		0.027	0.05	0	54.6	45.3	88.8	04/25/2014	
Nitrobenzene	0.01		0.064	0.1	0	64.2	54.1	102	04/25/2014	
o-Cresol	0.01		0.027	0.05	0	54.1	47.6	98.3	04/25/2014	
Pentachlorophenol	0.02		0.084	0.1	0	84.4	53.1	133	04/25/2014	
Pyridine	0.02		0.031	0.1	0	31.4	21.6	66.2	04/25/2014	
Surr: 2,4,6-Tribromophenol			0.049	0.05		98.6	52.6	124	04/25/2014	
Surr: 2-Fluorobiphenyl			0.016	0.025		63.5	57.8	101	04/25/2014	
Surr: 2-Fluorophenol			0.018	0.05		36.9	34.6	64.5	04/25/2014	
Surr: Nitrobenzene-d5			0.018	0.025		72.7	49.9	124	04/25/2014	
Surr: Phenol-d5			0.013	0.05		25.2	19.4	43.4	04/25/2014	
Surr: p-Terphenyl-d14			0.022	0.025		88.2	46.3	115	04/25/2014	



Quality Control Results

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Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 3510C, 8270C, SEMI-VOLATILES IN TCLP EXTRACT BY GC/MS

Batch	SampType:	LCSD	Units mg/L				RPD Limit 40			
SampID: LCSD-98169										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
2,4,5-Trichlorophenol	0.01		0.09	0.1	0	90.1	0.082	9.44	04/25/2014	
2,4,6-Trichlorophenol	0.01		0.084	0.1	0	83.7	0.07662	8.78	04/25/2014	
2,4-Dinitrotoluene	0.01		0.046	0.05	0	92.4	0.04504	2.53	04/25/2014	
Hexachlorobenzene	0.01		0.088	0.1	0	87.8	0.08504	3.16	04/25/2014	
Hexachlorobutadiene	0.01		0.072	0.1	0	72.4	0.06354	13.01	04/25/2014	
Hexachloroethane	0.01		0.065	0.1	0	65.2	0.05498	17.02	04/25/2014	
m,p-Cresol	0.01		0.034	0.05	0	67.3	0.02728	20.88	04/25/2014	
Nitrobenzene	0.01		0.073	0.1	0	73.3	0.0642	13.25	04/25/2014	
o-Cresol	0.01		0.033	0.05	0	66.9	0.02703	21.26	04/25/2014	
Pentachlorophenol	0.02		0.091	0.1	0	91.4	0.08438	7.93	04/25/2014	
Pyridine	0.02		0.034	0.1	0	34.3	0.03142	8.69	04/25/2014	
Surr: 2,4,6-Tribromophenol			0.051	0.05		102.1			04/25/2014	
Surr: 2-Fluorobiphenyl			0.017	0.025		69			04/25/2014	
Surr: 2-Fluorophenol			0.024	0.05		47.2			04/25/2014	
Surr: Nitrobenzene-d5			0.021	0.025		85.4			04/25/2014	
Surr: Phenol-d5			0.016	0.05		31.4			04/25/2014	
Surr: p-Terphenyl-d14			0.022	0.025		89.2			04/25/2014	

Batch	SampType:	MS	Units mg/L							
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
2,4,5-Trichlorophenol	0.1		0.843	1	0	84.3	38.6	123	04/28/2014	
2,4,6-Trichlorophenol	0.1		0.794	1	0	79.4	35.9	123	04/28/2014	
2,4-Dinitrotoluene	0.1		0.811	1	0	81.1	60	108	04/28/2014	
Hexachlorobenzene	0.1		0.843	1	0	84.3	55.9	106	04/28/2014	
Hexachlorobutadiene	0.1		0.725	1	0	72.5	35.7	100	04/28/2014	
Hexachloroethane	0.1		0.725	1	0	72.5	38.9	89.9	04/28/2014	
m,p-Cresol	0.1		1.12	2	0.02255	54.7	37.6	93.7	04/28/2014	
Nitrobenzene	0.1		0.775	1	0	77.5	51.8	104	04/28/2014	
o-Cresol	0.1		0.624	1	0	62.4	43	101	04/28/2014	
Pentachlorophenol	0.2		0.866	1	0	86.6	26.8	134	04/28/2014	
Pyridine	0.2		0.468	1	0	46.8	3.61	74.3	04/28/2014	
Cresols, Total	0.1		1.74	3	0.02255	57.2	43	101	04/28/2014	
Surr: 2,4,6-Tribromophenol			0.5	0.5		100	26.4	130	04/28/2014	
Surr: 2-Fluorobiphenyl			0.179	0.25		71.6	38.3	115	04/28/2014	
Surr: 2-Fluorophenol			0.244	0.5		48.8	16.5	65	04/28/2014	
Surr: Nitrobenzene-d5			0.249	0.25		99.6	47.6	107	04/28/2014	
Surr: Phenol-d5			0.162	0.5		32.3	9.94	41.7	04/28/2014	
Surr: p-Terphenyl-d14			0.214	0.25		85.4	63.4	122	04/28/2014	



Quality Control Results

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Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 3510C, 8270C, SEMI-VOLATILES IN TCLP EXTRACT BY GC/MS

Batch	SampType	MSD	Units mg/L				RPD Limit 29.2			
SampID: 14041303-001AMSD										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
2,4,5-Trichlorophenol	0.1		0.908	1	0	90.8	0.8427	7.50	04/28/2014	
2,4,6-Trichlorophenol	0.1		0.848	1	0	84.8	0.7935	6.66	04/28/2014	
2,4-Dinitrotoluene	0.1		0.871	1	0	87.1	0.8111	7.16	04/28/2014	
Hexachlorobenzene	0.1		0.918	1	0	91.8	0.8432	8.52	04/28/2014	
Hexachlorobutadiene	0.1		0.751	1	0	75.1	0.7246	3.62	04/28/2014	
Hexachloroethane	0.1		0.746	1	0	74.6	0.7247	2.84	04/28/2014	
m,p-Cresol	0.1		1.2	2	0.02255	58.9	1.116	7.32	04/28/2014	
Nitrobenzene	0.1		0.847	1	0	84.7	0.7746	8.92	04/28/2014	
o-Cresol	0.1		0.68	1	0	68	0.6236	8.65	04/28/2014	
Pentachlorophenol	0.2		0.932	1	0	93.2	0.8661	7.30	04/28/2014	
Pyridine	0.2		0.43	1	0	43	0.4684	8.48	04/28/2014	
Cresols, Total	0.1		1.88	3	0.02255	61.9	1.739	7.80	04/28/2014	
Surr: 2,4,6-Tribromophenol			0.504	0.5		100.8			04/28/2014	
Surr: 2-Fluorobiphenyl			0.181	0.25		72.3			04/28/2014	
Surr: 2-Fluorophenol			0.246	0.5		49.3			04/28/2014	
Surr: Nitrobenzene-d5			0.255	0.25		102.1			04/28/2014	
Surr: Phenol-d5			0.167	0.5		33.3			04/28/2014	
Surr: p-Terphenyl-d14			0.219	0.25		87.5			04/28/2014	

SW-846 3550B, 8082, POLYCHLORINATED BIPHENYLS (PCBS) BY GC/ECD

Batch	SampType	MBLK	Units µg/Kg							
SampID: MBLK-98118										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Aroclor 1016	37.5		ND						04/23/2014	
Aroclor 1221	37.5		ND						04/23/2014	
Aroclor 1232	37.5		ND						04/23/2014	
Aroclor 1242	37.5		ND						04/23/2014	
Aroclor 1248	37.5		ND						04/23/2014	
Aroclor 1254	37.5		ND						04/23/2014	
Aroclor 1260	37.5		ND						04/23/2014	
Surr: Decachlorobiphenyl			7.6	8.3		91.6	59	160	04/23/2014	
Surr: Tetrachloro-meta-xylene			6.8	8.3		82	31.6	114	04/23/2014	

Batch	SampType	LCS	Units µg/Kg							
SampID: LCSPCB-98118										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Aroclor 1016	37.5		135	166.7	0	80.9	54.9	121	04/23/2014	
Aroclor 1260	37.5		156	166.7	0	93.4	65.5	133	04/23/2014	
Surr: Decachlorobiphenyl			9	8.3		108.7	79.1	132	04/23/2014	
Surr: Tetrachloro-meta-xylene			6.8	8.3		82.3	31.6	114	04/23/2014	



Quality Control Results

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Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 3550B, 8082, POLYCHLORINATED BIPHENYLS (PCBS) BY GC/ECD

Batch 98118		SampType: MS		Units µg/Kg						Date
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Aroclor 1016	37.4	S	233	166.1	211.2	13.1	35.8	143	04/26/2014	
Aroclor 1260	37.4		209	166.1	157.2	31.2	22.3	152	04/26/2014	
Surr: Decachlorobiphenyl			5.6	8.272		67.9	5	156	04/26/2014	
Surr: Tetrachloro-meta-xylene			6.2	8.272		75.1	7.35	123	04/26/2014	

Batch 98118		SampType: MSD		Units µg/Kg				RPD Limit 40		Date
SampID: 14041303-001AMSD										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
Aroclor 1016	37.3		271	166	211.2	36.1	232.9	15.14	04/26/2014	
Aroclor 1260	37.3		226	166	157.2	41.2	209.1	7.60	04/26/2014	
Surr: Decachlorobiphenyl			5.2	8.264		63.1			04/26/2014	
Surr: Tetrachloro-meta-xylene			6.8	8.264		82.5			04/26/2014	

SW-846 9023

Batch 98217		SampType: MBLK		Units mg/Kg						Date
SampID: 140428MBLK										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Extractable Organic Halogens (EOX)	250		< 250						04/28/2014	

Batch 98217		SampType: LCS		Units mg/Kg						Date
SampID: 140428LCS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Extractable Organic Halogens (EOX)	250	J	230	250	0	92.4	70	130	04/28/2014	

Batch 98217		SampType: LCS		Units mg/Kg						Date
SampID: 140428LCS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Extractable Organic Halogens (EOX)	250	J	250	250	0	99	70	130	04/28/2014	

Batch 98217		SampType: MS		Units mg/Kg						Date
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Extractable Organic Halogens (EOX)	50	S	534	250	150	153.6	70	130	04/28/2014	

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 5030, 8260B, VOLATILE ORGANIC COMPOUNDS IN TCLP EXTRACT BY GC/MS

Batch 98238		SampType: MBLK		Units µg/L						Date Analyzed
SampID: MBLK-R140425-1										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
1,1-Dichloroethene	5		ND						04/25/2014	
1,2-Dichloroethane	5		ND						04/25/2014	
1,4-Dichlorobenzene	5		ND						04/25/2014	
2-Butanone	25		ND						04/25/2014	
Benzene	2		ND						04/25/2014	
Carbon tetrachloride	5		ND						04/25/2014	
Chlorobenzene	5		ND						04/25/2014	
Chloroform	5		ND						04/25/2014	
Tetrachloroethene	5		ND						04/25/2014	
Trichloroethene	5		ND						04/25/2014	
Vinyl chloride	2		ND						04/25/2014	
Surr: 1,2-Dichloroethane-d4			48.8	50		97.6	74.7	129	04/25/2014	
Surr: 4-Bromofluorobenzene			49.9	50		99.8	86	119	04/25/2014	
Surr: Dibromofluoromethane			50	50		100.1	81.7	123	04/25/2014	
Surr: Toluene-d8			50.4	50		100.9	84.3	114	04/25/2014	

Batch 98238		SampType: LCSD		Units µg/L		RPD Limit 40				Date Analyzed
SampID: LCSD-R140425-1										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
1,1-Dichloroethene	5		47.5	50	0	95	47.59	0.17	04/25/2014	
1,2-Dichloroethane	5		47	50	0	94	45.95	2.22	04/25/2014	
1,4-Dichlorobenzene	5		48.1	50	0	96.2	47.95	0.35	04/25/2014	
2-Butanone	25		123	125	0	98.1	123.4	0.62	04/25/2014	
Benzene	2		46.7	50	0	93.4	46.08	1.32	04/25/2014	
Carbon tetrachloride	5		53.1	50	0	106.2	51.64	2.83	04/25/2014	
Chlorobenzene	5		49.4	50	0	98.8	49.1	0.63	04/25/2014	
Chloroform	5		48.2	50	0	96.4	47.13	2.22	04/25/2014	
Tetrachloroethene	5		49.2	50	0	98.3	48.43	1.52	04/25/2014	
Trichloroethene	5		48.3	50	0	96.5	47.44	1.71	04/25/2014	
Vinyl chloride	2		53.9	50	0	107.9	52.59	2.52	04/25/2014	
Surr: 1,2-Dichloroethane-d4			48.8	50		97.6			04/25/2014	
Surr: 4-Bromofluorobenzene			48.1	50		96.2			04/25/2014	
Surr: Dibromofluoromethane			50.5	50		101			04/25/2014	
Surr: Toluene-d8			49.5	50		99			04/25/2014	

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

SW-846 1311, 5030, 8260B, VOLATILE ORGANIC COMPOUNDS IN TCLP EXTRACT BY GC/MS

Batch 98238		SampType: LCS		Units µg/L						
SampID: LCS-R140425-1										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
1,1-Dichloroethene	5		47.6	50	0	95.2	74.1	117	04/25/2014	
1,2-Dichloroethane	5		46	50	0	91.9	70.6	118	04/25/2014	
1,4-Dichlorobenzene	5		48	50	0	95.9	77.8	114	04/25/2014	
2-Butanone	25		123	125	0	98.7	70.7	136	04/25/2014	
Benzene	2		46.1	50	0	92.2	80	114	04/25/2014	
Carbon tetrachloride	5		51.6	50	0	103.3	79.4	130	04/25/2014	
Chlorobenzene	5		49.1	50	0	98.2	81.4	110	04/25/2014	
Chloroform	5		47.1	50	0	94.3	82.7	116	04/25/2014	
Tetrachloroethene	5		48.4	50	0	96.9	72.5	125	04/25/2014	
Trichloroethene	5		47.4	50	0	94.9	84.4	114	04/25/2014	
Vinyl chloride	2		52.6	50	0	105.2	58	134	04/25/2014	
Surr: 1,2-Dichloroethane-d4			48.7	50		97.4	74.7	129	04/25/2014	
Surr: 4-Bromofluorobenzene			47.8	50		95.7	86	119	04/25/2014	
Surr: Dibromofluoromethane			49.7	50		99.5	81.7	123	04/25/2014	
Surr: Toluene-d8			49.2	50		98.4	84.1	114	04/25/2014	

Batch 98238		SampType: MS		Units mg/L						
SampID: 14041303-001AMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
1,1-Dichloroethene	0.5		4.61	5	0	92.2	61.3	123	04/25/2014	
1,2-Dichloroethane	0.5		4.68	5	0	93.5	71.5	116	04/25/2014	
1,4-Dichlorobenzene	0.5		4.96	5	0	99.2	76.9	113	04/25/2014	
2-Butanone	2.5		5.11	5	0	102.3	64.1	132	04/25/2014	
Benzene	0.2		4.55	5	0	91	81.5	113	04/25/2014	
Carbon tetrachloride	0.5		4.72	5	0	94.4	55.5	125	04/25/2014	
Chlorobenzene	0.5		4.94	5	0	98.7	81.8	111	04/25/2014	
Chloroform	0.5		4.81	5	0	96.3	81	115	04/25/2014	
Tetrachloroethene	0.5		4.46	5	0	89.2	61.7	114	04/25/2014	
Trichloroethene	0.5		4.66	5	0	93.3	74.4	117	04/25/2014	
Vinyl chloride	0.2		4.55	5	0	91.1	45.7	130	04/25/2014	
Surr: 1,2-Dichloroethane-d4			4.9	5		97.9	74.7	129	04/25/2014	
Surr: 4-Bromofluorobenzene			5.02	5		100.5	86	119	04/25/2014	
Surr: Dibromofluoromethane			4.99	5		99.8	81.7	123	04/25/2014	
Surr: Toluene-d8			5.01	5		100.2	84.3	114	04/25/2014	



Receiving Check List

<http://www.teklabinc.com/>

Client: Tetra Tech

Work Order: 14041303

Client Project: Strecker Forest RA

Report Date: 28-Apr-14

Carrier: Dave Kinroth

Received By: ML

Completed by: *Emily Pohlman*
On: 24-Apr-14
Emily E. Pohlman

Reviewed by: *Michael L. Austin*
On: 24-Apr-14
Michael L. Austin

Pages to follow: Chain of custody Extra pages included

- | | | | | |
|---|--|--|--|----------------------------------|
| Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> | Temp °C 18.4 |
| Type of thermal preservation? | None <input checked="" type="checkbox"/> | Ice <input type="checkbox"/> | Blue Ice <input type="checkbox"/> | Dry Ice <input type="checkbox"/> |
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Reported field parameters measured: | Field <input type="checkbox"/> | Lab <input type="checkbox"/> | NA <input checked="" type="checkbox"/> | |
| Container/Temp Blank temperature in compliance? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | |

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

- | | | | |
|---|------------------------------|-----------------------------|---|
| Water – at least one vial per sample has zero headspace? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | No VOA vials <input checked="" type="checkbox"/> |
| Water - TOX containers have zero headspace? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | No TOX containers <input checked="" type="checkbox"/> |
| Water - pH acceptable upon receipt? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |
| NPDES/CWA TCN interferences checked/treated in the field? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |

Any No responses must be detailed below or on the COC.

The samples were out of temperature compliance upon receipt. Client notified via workorder summary.

Tetra Tech Inc
 START 7 Contact

14041303

Rapid Turn Around
 72 hours requested

CHAIN OF CUSTODY RECORD
 ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print) Heath Smith, Dave Kinosh	NAME OF SURVEY OR ACTIVITY Strecker Forest RA	DATE OF COLLECTION 23 / 4 / 14 DAY MONTH YEAR	SHEET 11 of 11
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SAMPLE NUMBER	TYPE OF CONTAINERS				VOA SET (2 VIALS EA)	SAMPLED MEDIA					RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	CUBITAINER	BOTTLE	BOTTLE	BOTTLE		water	soil	sediment	dust	other	
SFRA-25		1				X					Code R List of Analytical Parameters for Landfill Profile plus TCLP Pesticides and Herbicides
 (X) Dave Kinosh 4-23-14 											
SAMPLE ARRIVED @ LAB w/out ICE 18.4°C											
RUSH											

DESCRIPTION OF SHIPMENT	MODE OF SHIPMENT
<input checked="" type="checkbox"/> PIECE(S) CONSISTING OF _____ BOX(ES) <input checked="" type="checkbox"/> ICE CHEST(S): OTHER _____	<input type="checkbox"/> COMMERCIAL CARRIER _____ <input type="checkbox"/> COURIER _____ <input checked="" type="checkbox"/> SAMPLER CONVEYED _____ (SHIPPING DOCUMENT NUMBER) _____

PERSONNEL CUSTODY RECORD			
RELINQUISHED BY (SAMPLER) Dave Kinosh	DATE 4-23-14	TIME 1:26pm	RECEIVED BY Minda Ly
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED
REASON FOR CHANGE OF CUSTODY Delivery to Lab for Analysis			
RELINQUISHED BY	DATE	TIME	RECEIVED BY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED
REASON FOR CHANGE OF CUSTODY			
RELINQUISHED BY	DATE	TIME	RECEIVED BY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED
REASON FOR CHANGE OF CUSTODY			

CODE R

Standard analytical required at all our landfills with the exceptions shown below

State of Illinois Permit

pH
Paint Filter (Free Liquids)
Reactive Cyanide
Reactive Sulfide
Total Phenolics
Flash Point (Open Cup)
PCB's (if suspect or unknown)
F-Code Solvent Scan (if suspect or unknown)
TOX (required only for Five Oaks, Milam, Tazewell, and Cottonwood Hills for liquids for solidification)

TCLP Organics

Benzene
Carbon Tetrachloride
Chlorobenzene
Chloroform
o-Cresol
m-Cresol
p-Cresol
1,4-Dichlorobenzene
1,2-Dichlorethane
1,1-Dichloroethene
2,4-Dinitrotoluene
Hexachlorobenzene
Hexachloro-1,3 butadiene
Hexachloroethane
Methyl Ethyl Ketone
Nitrobenzene
Pentachlorophenol
Pyridine
Tetrachloroethylene
Trichloroethylene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
Vinyl Chloride

TCLP Metals

Arsenic
Barium
Cadmium
Chromium
Lead
Mercury
Selenium
Silver

EXCEPTIONS

Not required for UST petroleum fuel product contamination. What is required for UST petroleum fuel product contamination is pH, paint filter, flash point, and TCLP lead. Not required for wood material contaminated with creosol. For creosol contamination, if the waste is over 10 years old and is weathered, no analytical is required. If less than 10 years and/or not weathered, TCLP Arsenic, TCLP Creosol, and TCLP Pentachlorophenol are required.

In addition: TCLP Pesticides
TCLP Herbicides

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-7273-1

Client Project/Site: Strecker Forest Site, Wildwood, MO

For:

Tetra Tech EM Inc.
415 Oak Street
Kansas City, Missouri 64106

Attn: Ms. Emily Fisher



Authorized for release by:
7/7/2014 2:07:14 PM

Erika Gish, Project Manager II
(314)298-8566
erika.gish@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

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

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Job ID: 160-7273-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Tetra Tech EM Inc.

Project: Strecker Forest Site, Wildwood, MO

Report Number: 160-7273-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The sample was received on 6/30/2014 4:51 PM; the sample arrived in good condition and properly preserved. The temperature of the cooler at receipt was 22.4° C.

Except: The sample was received on the day of sampling. Proceed out of temperature.

SEMIVOLATILE ORGANIC COMPOUNDS (GC/MS)

Sample SFRA-128 (160-7273-1) was analyzed for Semivolatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8270D. The samples were prepared on 07/01/2014 and analyzed on 07/02/2014.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

POLYCHLORINATED BIPHENYLS (PCBS)

Sample SFRA-128 (160-7273-1) was analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082. The samples were prepared on 07/01/2014 and analyzed on 07/02/2014.

Case Narrative

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Job ID: 160-7273-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

PERCENT SOLIDS

Sample SFRA-128 (160-7273-1) was analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 07/01/2014.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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~~Environmental Protection Agency, Office # 276627~~

Tetra Tech
Rick Clayton

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print) <i>Rick Clayton</i>	NAME OF SURVEY OR ACTIVITY <i>St. Louis Forest</i>	DATE OF COLLECTION 6 30 14 DAY MONTH YEAR	SHEET 1 of 1
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CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS				VOA SET (2 VIALS EA)	SAMPLED MEDIA					RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	CUBITAINER	BOTTLE	BOTTLE	BOTTLE		water	soil	sediment	clust	other	
NUMBERS OF CONTAINERS PER SAMPLE NUMBER											
<i>SFRD-128</i>		<i>1</i>				<i>X</i>					<i>PCB & SVOCs</i> <i>Date: 6.30.14</i> <i>Time: 15:15</i>



160-7273 Chain of Custody

DESCRIPTION OF SHIPMENT MODE OF SHIPMENT

_____ PIECE(S) CONSISTING OF _____ BOX(ES) _____ ICE CHEST(S); OTHER _____	_____ COMMERCIAL CARRIER: _____ _____ COURIER _____ SAMPLER CONVEYED (SHIPPING DOCUMENT NUMBER) _____
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PERSONNEL CUSTODY RECORD

RELINQUISHED BY (SAMPLER) <i>Rick Clayton</i>	DATE <i>6.30.14</i>	TIME <i>17:51</i>	RECEIVED BY <i>Jill Clark</i>	REASON FOR CHANGE OF CUSTODY: <i>1651 6.30.14 128</i>
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	
RELINQUISHED BY	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED	

Login Sample Receipt Checklist

Client: Tetra Tech EM Inc.

Job Number: 160-7273-1

Login Number: 7273

List Source: TestAmerica St. Louis

List Number: 1

Creator: Clarke, Jill C

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Definitions/Glossary

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SL
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Sample Summary

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-7273-1	SFRA-128	Solid	06/30/14 15:15	06/30/14 16:51

- 1
- 2
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- 11
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Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Client Sample ID: SFRA-128

Lab Sample ID: 160-7273-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Bis(2-ethylhexyl) phthalate	1700		420	57	ug/Kg	1	☼	8270D	Total/NA
2-Methylnaphthalene	240	J	420	42	ug/Kg	1	☼	8270D	Total/NA
Naphthalene	910		420	42	ug/Kg	1	☼	8270D	Total/NA
PCB-1260	19	J	41	6.9	ug/Kg	1	☼	8082A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica St. Louis



Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Client Sample ID: SFRA-128

Lab Sample ID: 160-7273-1

Date Collected: 06/30/14 15:15

Matrix: Solid

Date Received: 06/30/14 16:51

Percent Solids: 79.1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Acenaphthylene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Anthracene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Benzo[a]anthracene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Benzo[b]fluoranthene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Benzo[k]fluoranthene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Benzo[g,h,i]perylene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Benzo[a]pyrene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Bis(2-chloroethoxy)methane	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Bis(2-chloroethyl)ether	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Bis(2-ethylhexyl) phthalate	1700		420	57	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
4-Bromophenyl phenyl ether	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Butyl benzyl phthalate	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Carbazole	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
4-Chloroaniline	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
4-Chloro-3-methylphenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2-Chloronaphthalene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2-Chlorophenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
4-Chlorophenyl phenyl ether	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Chrysene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Dibenz(a,h)anthracene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Dibenzofuran	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Di-n-butyl phthalate	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
1,2-Dichlorobenzene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
1,3-Dichlorobenzene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
1,4-Dichlorobenzene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
3,3'-Dichlorobenzidine	ND		2000	420	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2,4-Dichlorophenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Diethyl phthalate	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2,4-Dimethylphenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Dimethyl phthalate	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
4,6-Dinitro-2-methylphenol	ND		2000	420	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2,4-Dinitrophenol	ND		2000	420	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2,4-Dinitrotoluene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2,6-Dinitrotoluene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Di-n-octyl phthalate	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Fluoranthene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Fluorene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Hexachlorobenzene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Hexachlorobutadiene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Hexachlorocyclopentadiene	ND		2000	420	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Hexachloroethane	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Indeno[1,2,3-cd]pyrene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Isophorone	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2-Methylnaphthalene	240 J		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2-Methylphenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
3 & 4 Methylphenol	ND		830	84	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Naphthalene	910		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2-Nitroaniline	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1

TestAmerica St. Louis

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Client Sample ID: SFRA-128

Lab Sample ID: 160-7273-1

Date Collected: 06/30/14 15:15

Matrix: Solid

Date Received: 06/30/14 16:51

Percent Solids: 79.1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Nitroaniline	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
4-Nitroaniline	ND		2000	420	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Nitrobenzene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2-Nitrophenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
4-Nitrophenol	ND		2000	420	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
N-Nitrosodiphenylamine	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
N-Nitrosodi-n-propylamine	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
bis (2-chloroisopropyl) ether	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Pentachlorophenol	ND		830	420	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Phenanthrene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Phenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
Pyrene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
1,2,4-Trichlorobenzene	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2,4,5-Trichlorophenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1
2,4,6-Trichlorophenol	ND		420	42	ug/Kg	☼	07/01/14 10:27	07/02/14 21:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	86		53 - 97	07/01/14 10:27	07/02/14 21:01	1
2,4,6-Tribromophenol (Surr)	81		46 - 111	07/01/14 10:27	07/02/14 21:01	1
Nitrobenzene-d5 (Surr)	82		55 - 98	07/01/14 10:27	07/02/14 21:01	1
Phenol-d5 (Surr)	85		54 - 101	07/01/14 10:27	07/02/14 21:01	1
Terphenyl-d14 (Surr)	76		58 - 123	07/01/14 10:27	07/02/14 21:01	1
2-Fluorobiphenyl (Surr)	83		56 - 97	07/01/14 10:27	07/02/14 21:01	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		41	11	ug/Kg	☼	07/01/14 10:51	07/02/14 11:10	1
PCB-1221	ND		41	11	ug/Kg	☼	07/01/14 10:51	07/02/14 11:10	1
PCB-1232	ND		41	11	ug/Kg	☼	07/01/14 10:51	07/02/14 11:10	1
PCB-1242	ND		41	11	ug/Kg	☼	07/01/14 10:51	07/02/14 11:10	1
PCB-1248	ND		41	11	ug/Kg	☼	07/01/14 10:51	07/02/14 11:10	1
PCB-1254	ND		41	6.9	ug/Kg	☼	07/01/14 10:51	07/02/14 11:10	1
PCB-1260	19	J	41	6.9	ug/Kg	☼	07/01/14 10:51	07/02/14 11:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	77		44 - 150	07/01/14 10:51	07/02/14 11:10	1

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 160-129145/1-A

Matrix: Solid

Analysis Batch: 129448

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 129145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Acenaphthylene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Anthracene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Benzo[a]anthracene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Benzo[b]fluoranthene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Benzo[k]fluoranthene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Benzo[g,h,i]perylene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Benzo[a]pyrene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Bis(2-chloroethoxy)methane	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Bis(2-chloroethyl)ether	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Bis(2-ethylhexyl) phthalate	ND		330	45	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
4-Bromophenyl phenyl ether	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Butyl benzyl phthalate	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Carbazole	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
4-Chloroaniline	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
4-Chloro-3-methylphenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2-Chloronaphthalene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2-Chlorophenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
4-Chlorophenyl phenyl ether	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Chrysene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Dibenz(a,h)anthracene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Dibenzofuran	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Di-n-butyl phthalate	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
1,2-Dichlorobenzene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
1,3-Dichlorobenzene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
1,4-Dichlorobenzene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
3,3'-Dichlorobenzidine	ND		1600	330	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2,4-Dichlorophenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Diethyl phthalate	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2,4-Dimethylphenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Dimethyl phthalate	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
4,6-Dinitro-2-methylphenol	ND		1600	330	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2,4-Dinitrophenol	ND		1600	330	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2,4-Dinitrotoluene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2,6-Dinitrotoluene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Di-n-octyl phthalate	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Fluoranthene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Fluorene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Hexachlorobenzene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Hexachlorobutadiene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Hexachlorocyclopentadiene	ND		1600	330	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Hexachloroethane	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Indeno[1,2,3-cd]pyrene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Isophorone	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2-Methylnaphthalene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2-Methylphenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
3 & 4 Methylphenol	ND		660	67	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Naphthalene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1

TestAmerica St. Louis

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 160-129145/1-A

Matrix: Solid

Analysis Batch: 129448

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 129145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Nitroaniline	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
3-Nitroaniline	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
4-Nitroaniline	ND		1600	330	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Nitrobenzene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2-Nitrophenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
4-Nitrophenol	ND		1600	330	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
N-Nitrosodiphenylamine	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
N-Nitrosodi-n-propylamine	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
bis (2-chloroisopropyl) ether	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Pentachlorophenol	ND		660	330	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Phenanthrene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Phenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
Pyrene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
1,2,4-Trichlorobenzene	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2,4,5-Trichlorophenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1
2,4,6-Trichlorophenol	ND		330	33	ug/Kg		07/01/14 10:27	07/02/14 18:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	87		53 - 97	07/01/14 10:27	07/02/14 18:21	1
2,4,6-Tribromophenol (Surr)	87		46 - 111	07/01/14 10:27	07/02/14 18:21	1
Nitrobenzene-d5 (Surr)	86		55 - 98	07/01/14 10:27	07/02/14 18:21	1
Phenol-d5 (Surr)	86		54 - 101	07/01/14 10:27	07/02/14 18:21	1
Terphenyl-d14 (Surr)	79		58 - 123	07/01/14 10:27	07/02/14 18:21	1
2-Fluorobiphenyl (Surr)	87		56 - 97	07/01/14 10:27	07/02/14 18:21	1

Lab Sample ID: LCS 160-129145/2-A

Matrix: Solid

Analysis Batch: 129448

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 129145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	6670	5300		ug/Kg		79	63 - 95
Acenaphthylene	6670	5290		ug/Kg		79	62 - 98
Anthracene	6680	5110		ug/Kg		77	63 - 100
Benzo[a]anthracene	6670	5350		ug/Kg		80	74 - 114
Benzo[b]fluoranthene	6670	5270		ug/Kg		79	68 - 109
Benzo[k]fluoranthene	6680	5220		ug/Kg		78	69 - 111
Benzo[g,h,i]perylene	6670	5790		ug/Kg		87	67 - 121
Benzo[a]pyrene	6670	5230		ug/Kg		78	63 - 103
Bis(2-chloroethoxy)methane	6680	5330		ug/Kg		80	62 - 91
Bis(2-chloroethyl)ether	6670	5060		ug/Kg		76	58 - 92
Bis(2-ethylhexyl) phthalate	6670	5300		ug/Kg		79	63 - 112
4-Bromophenyl phenyl ether	6670	5320		ug/Kg		80	63 - 106
Butyl benzyl phthalate	6670	5260		ug/Kg		79	59 - 111
Carbazole	6690	5050		ug/Kg		75	64 - 101
4-Chloroaniline	6670	4250		ug/Kg		64	43 - 70
4-Chloro-3-methylphenol	6670	5400		ug/Kg		81	58 - 95
2-Chloronaphthalene	6670	5400		ug/Kg		81	61 - 94
2-Chlorophenol	6670	5330		ug/Kg		80	60 - 91

TestAmerica St. Louis

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 160-129145/2-A

Matrix: Solid

Analysis Batch: 129448

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 129145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Chlorophenyl phenyl ether	6680	5370		ug/Kg		80	61 - 96
Chrysene	6670	5270		ug/Kg		79	66 - 100
Dibenz(a,h)anthracene	6670	5630		ug/Kg		84	67 - 114
Dibenzofuran	6670	5280		ug/Kg		79	58 - 95
Di-n-butyl phthalate	6670	4990		ug/Kg		75	62 - 104
1,2-Dichlorobenzene	6670	5170		ug/Kg		78	59 - 90
1,3-Dichlorobenzene	6670	5170		ug/Kg		78	57 - 88
1,4-Dichlorobenzene	6670	5330		ug/Kg		80	58 - 88
3,3'-Dichlorobenzidene	6670	5280		ug/Kg		79	50 - 90
2,4-Dichlorophenol	6670	5310		ug/Kg		80	59 - 90
Diethyl phthalate	6670	5160		ug/Kg		77	62 - 97
2,4-Dimethylphenol	6670	5490		ug/Kg		82	54 - 108
Dimethyl phthalate	6670	5340		ug/Kg		80	63 - 98
4,6-Dinitro-2-methylphenol	6670	5680		ug/Kg		85	31 - 112
2,4-Dinitrophenol	6670	4870		ug/Kg		73	20 - 100
2,4-Dinitrotoluene	6680	5480		ug/Kg		82	61 - 103
2,6-Dinitrotoluene	6670	5150		ug/Kg		77	63 - 99
Di-n-octyl phthalate	6670	5320		ug/Kg		80	61 - 111
Fluoranthene	6670	5110		ug/Kg		77	63 - 101
Fluorene	6670	5310		ug/Kg		80	62 - 96
Hexachlorobenzene	6670	5240		ug/Kg		79	62 - 106
Hexachlorobutadiene	6670	5510		ug/Kg		83	57 - 94
Hexachlorocyclopentadiene	6670	5340		ug/Kg		80	40 - 115
Hexachloroethane	6670	5340		ug/Kg		80	59 - 93
Indeno[1,2,3-cd]pyrene	6670	5850		ug/Kg		88	65 - 120
Isophorone	6670	4860		ug/Kg		73	57 - 86
2-Methylnaphthalene	6650	5260		ug/Kg		79	59 - 90
2-Methylphenol	6680	5420		ug/Kg		81	58 - 96
3 & 4 Methylphenol	6670	5930		ug/Kg		89	47 - 113
Naphthalene	6670	5270		ug/Kg		79	60 - 90
2-Nitroaniline	6690	5220		ug/Kg		78	58 - 105
3-Nitroaniline	6670	5000		ug/Kg		75	55 - 91
4-Nitroaniline	6690	5410		ug/Kg		81	57 - 94
Nitrobenzene	6670	5330		ug/Kg		80	58 - 95
2-Nitrophenol	6680	5460		ug/Kg		82	60 - 93
4-Nitrophenol	6680	5540		ug/Kg		83	54 - 101
N-Nitrosodiphenylamine	6670	5970		ug/Kg		90	78 - 133
N-Nitrosodi-n-propylamine	6670	5100		ug/Kg		77	60 - 104
bis (2-chloroisopropyl) ether	6670	5240		ug/Kg		79	47 - 105
Pentachlorophenol	6670	5260		ug/Kg		79	50 - 100
Phenanthrene	6680	5260		ug/Kg		79	63 - 99
Phenol	6670	5280		ug/Kg		79	53 - 89
Pyrene	6670	5440		ug/Kg		82	64 - 102
1,2,4-Trichlorobenzene	6710	5450		ug/Kg		81	60 - 91
2,4,5-Trichlorophenol	6670	5670		ug/Kg		85	59 - 94
2,4,6-Trichlorophenol	6670	5490		ug/Kg		82	59 - 95

TestAmerica St. Louis

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 160-129145/2-A
Matrix: Solid
Analysis Batch: 129448

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 129145

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorophenol (Surr)	81		53 - 97
2,4,6-Tribromophenol (Surr)	86		46 - 111
Nitrobenzene-d5 (Surr)	79		55 - 98
Phenol-d5 (Surr)	81		54 - 101
Terphenyl-d14 (Surr)	78		58 - 123
2-Fluorobiphenyl (Surr)	81		56 - 97

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 160-129153/1-A
Matrix: Solid
Analysis Batch: 129357

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 129153

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-1016	ND		33	8.7	ug/Kg		07/01/14 10:51	07/02/14 10:38	1
PCB-1221	ND		33	8.7	ug/Kg		07/01/14 10:51	07/02/14 10:38	1
PCB-1232	ND		33	8.7	ug/Kg		07/01/14 10:51	07/02/14 10:38	1
PCB-1242	ND		33	8.7	ug/Kg		07/01/14 10:51	07/02/14 10:38	1
PCB-1248	ND		33	8.7	ug/Kg		07/01/14 10:51	07/02/14 10:38	1
PCB-1254	ND		33	5.5	ug/Kg		07/01/14 10:51	07/02/14 10:38	1
PCB-1260	ND		33	5.5	ug/Kg		07/01/14 10:51	07/02/14 10:38	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCB Decachlorobiphenyl (Surr)	88		44 - 150	07/01/14 10:51	07/02/14 10:38	1

Lab Sample ID: LCS 160-129153/2-A
Matrix: Solid
Analysis Batch: 129357

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 129153

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
PCB-1016	167	158		ug/Kg		95	69 - 128
PCB-1260	167	178		ug/Kg		107	74 - 133

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	89		44 - 150

Lab Sample ID: 160-7273-1 MS
Matrix: Solid
Analysis Batch: 129357

Client Sample ID: SFRA-128
Prep Type: Total/NA
Prep Batch: 129153

Analyte	Sample Sample		Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
PCB-1016	ND		209	174		ug/Kg	☼	83	29 - 150
PCB-1260	19	J	209	214		ug/Kg	☼	93	22 - 150

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	85		44 - 150

TestAmerica St. Louis

QC Association Summary

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

GC/MS Semi VOA

Prep Batch: 129145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7273-1	SFRA-128	Total/NA	Solid	3550C	
LCS 160-129145/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 160-129145/1-A	Method Blank	Total/NA	Solid	3550C	

Analysis Batch: 129448

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7273-1	SFRA-128	Total/NA	Solid	8270D	129145
LCS 160-129145/2-A	Lab Control Sample	Total/NA	Solid	8270D	129145
MB 160-129145/1-A	Method Blank	Total/NA	Solid	8270D	129145

GC Semi VOA

Prep Batch: 129153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7273-1	SFRA-128	Total/NA	Solid	3550C	
160-7273-1 MS	SFRA-128	Total/NA	Solid	3550C	
160-7273-1 MSD	SFRA-128	Total/NA	Solid	3550C	
LCS 160-129153/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 160-129153/1-A	Method Blank	Total/NA	Solid	3550C	

Analysis Batch: 129357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7273-1	SFRA-128	Total/NA	Solid	8082A	129153
160-7273-1 MS	SFRA-128	Total/NA	Solid	8082A	129153
160-7273-1 MSD	SFRA-128	Total/NA	Solid	8082A	129153
LCS 160-129153/2-A	Lab Control Sample	Total/NA	Solid	8082A	129153
MB 160-129153/1-A	Method Blank	Total/NA	Solid	8082A	129153

General Chemistry

Analysis Batch: 129130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7273-1	SFRA-128	Total/NA	Solid	Moisture	
160-7273-1 DU	SFRA-128	Total/NA	Solid	Moisture	

Surrogate Summary

Client: Tetra Tech EM Inc.
Project/Site: Strecker Forest Site, Wildwood, MO

TestAmerica Job ID: 160-7273-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		2FP (53-97)	TBP (46-111)	NBZ (55-98)	PHL (54-101)	TPH (58-123)	FBP (56-97)
160-7273-1	SFRA-128	86	81	82	85	76	83
LCS 160-129145/2-A	Lab Control Sample	81	86	79	81	78	81
MB 160-129145/1-A	Method Blank	87	87	86	86	79	87

Surrogate Legend

2FP = 2-Fluorophenol (Surr)

TBP = 2,4,6-Tribromophenol (Surr)

NBZ = Nitrobenzene-d5 (Surr)

PHL = Phenol-d5 (Surr)

TPH = Terphenyl-d14 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCB1 (44-150)
160-7273-1	SFRA-128	77
160-7273-1 MS	SFRA-128	85
160-7273-1 MSD	SFRA-128	81
LCS 160-129153/2-A	Lab Control Sample	89
MB 160-129153/1-A	Method Blank	88

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)

EPA Advanced KM TEQ Calculator

General Instructions

Password to protect/unprotect worksheets = "dioxin"

These instructions apply to this Advanced Kaplan-Meier (KM) Toxicity Equivalence (TEQ) calculator, which includes calculations that support **a simple, quasi-sensitivity analysis** that examines the effect of various ways of handling nondetected (ND) or rejected (R-flagged) analytical data results within a sample's congener profile. A Basic version of this calculator is also available for TEQ analyses uncomplicated by high-toxicity equivalence factor (TEF) non-detected congeners or rejected data, therefore it is easier to learn. Also, the Basic version is structured to assist TEQ analysis and upper confidence limit (UCL) calculations for incremental samples. Both tools are intended for use by practitioners familiar with the calculation and use of TEQ concentrations for dioxins, furans and dioxin-like PCBs.

Please read the discussion about handling nondetected and rejected congeners on the **KM Discussion** worksheet (green tab)!

BE AWARE

Individual statisticians vary in their acceptance of Helsel's adaptation of the Kaplan-Meier (KM) technique to estimate sample TEQs when nondetected congeners are present (Helsel 2009). (More details of this technique are covered in the "**KM Discussion**" worksheet.) Other methods to avoid simple substitution for nondetects were suggested by peer reviewers of this calculator, and they may be incorporated into future updates of this calculator. The user is advised to seek input from a qualified statistician if important project or site decisions are dependent upon the choice of TEQ calculation method.

Although the calculator provides estimates of specific KM TEQ results, the intent of the Advanced calculator is to provide the user with a tool for sensitivity analysis, rather than a single "answer" for the KM TEQ. The project team should consider the full range of KM TEQ results for each sample to determine whether additional sample collection is warranted to support decisions to be made based on the data.

The quasi-sensitivity analysis is performed by calculating the TEQ in various ways to estimate the consequences of using or not using ND or rejected (R) data values. Data entered into the calculator should be reviewed and validated in accordance with all project quality requirements prior to performing the sensitivity analysis.

This workbook can be used to document the approach used to calculate and choose TEQ values. It records TEQs calculated using substitution methods for NDs (0, 1/2-DL, and DL) and the KM method. It also records when R data are used at face value to assess whether the rejected congeners have a significant effect on the reported TEQ. This helps determine whether reanalysis of the sample is necessary. See discussion of ND and R data on the "**KM Discussion**" worksheet.

The workbook uses an automated macro that performs the calculations and provides error messages if necessary, allowing the user to correct and repeat the process until the data are correctly entered.

Inserting more sample rows

The "**Data Entry & Output**" sheet (**blue tab**) is designed to accommodate up to 50 samples. It is not necessary to delete blank sample rows if the data set is comprised of less than 50 samples. However, if desired, the user can remove unneeded rows using the "Remove Samples" macro button (see cells P3 to R5 of the "**Data Entry & Output**" sheet). If more than 50 samples are required, samples can be added using the "Add Samples" macro button (see cells R3 to T5 of the "**Data Entry & Output**" sheet). When run, both of these macros will prompt the user for the number of samples to be added or deleted. An error message will be provided if too many samples are to be added or removed. At least one sample must be left in the calculator to prevent errors. A maximum of 2,000 total samples is enforced based on limits to the size of an Excel 2007 worksheet.

"List" for TEQ output

To facilitate transfer of the TEQ results to another spreadsheet, each sample ID, its TEQ result, and any qualifier are reproduced in an uninterrupted list that is located **below** the data input rows in Columns AI through AM.

Excel format

Note that the calculator workbook is saved in Excel 97-2003 Workbook format (*.xls). The workbook should work properly in Excel 2007 and Excel 2010, and may be saved in Excel Macro-Enabled Workbook format (*.xlsm). In Excel 2007 and 2010 versions, the Excel Workbook format (*.xlsx) will not allow the macros in the calculator to operate properly, and should not be used to save the workbook unless all data processing is complete.

Unprotecting worksheets

To make some changes to worksheets, the user will need to unprotect the worksheet. Unprotecting the sheet can be performed using the Home/Format/Protection/Unprotect Sheet option. The password is "dioxin". **The protection will be re-enabled automatically each time the macro is run**, so it is not necessary for the user to manually reenable protection.

Instructions for Using the TEQ Calculator

Step

Enabling macros	<p>Note: Prior to their use, macros will first need to be enabled. In Excel 2007, this can be performed by selecting 'Options' on the Security Warning bar that appears below the Excel menu bars when the workbook is opened, and selecting the 'Enable this content' button, then selecting the 'OK' button. For other versions of Excel, consult Excel HELP to determine how to enable macros.</p> <p>Once macros are enabled, follow the steps below.</p>
Automated data entry	<p>Note: The "Data Import" sheet (purple tab) provides a way to enter data quickly and accurately using a flat-file format from a database, comma-separated-value file or text file. See specific instructions on the "Data Import" worksheet. In this case, Steps 1, 2 and 3 below will be performed automatically by the automated data entry macro, and the user may proceed to Step 4 immediately after the data has been imported.</p>
1	<p>Enter the sample numbers in column B of the "Data Entry & Output" sheet (blue tab). The sample numbers should be entered in the top row (Row A) of each five-row grouping. If a sample number in any Row A is left blank, the macro will stop operation after the previous sample and will not execute for any samples after this blank sample number. <u>Note that this step will be performed automatically if the automated data entry macro is used.</u></p>
Hiding columns	<p>If data are not present for all congeners, the user may leave these columns blank and may hide columns without data. As with deleting and adding rows, the user will have to unprotect the worksheet to hide or unhide columns. Columns should not be deleted from the worksheet. Hide columns using the "Home" menu: Format/Visibility/Hide & Unhide/Hide Columns.</p>
Informational data entry	<p>Cells D2 to J4 of the "Data Entry & Output" sheet (blue tab) allow the user to enter a project name, matrix (soil, groundwater, etc.), concentration units, person entering the data, and the date of the analysis. It is recommended that these be entered to assist with data interpretation. The workbook should be used for a single sampling matrix with the same concentration units. Data for other matrices should be entered into separate copies of the workbook.</p>
2	<p>Note: Step 2 is optional, but may help increase the ease, speed and accuracy of data input. <u>Note that this step will be performed automatically if the automated data entry macro is used.</u></p>
Reorder congeners to match lab report	<p>Check the order of the chemical names to ensure they are listed in the same order as the source data reports that will be used for data input. If they are not in the same order, change numbers in row 6 so that they correspond to the order on the project data reports. Then, click the beige button labeled "Sort Chemicals", which will run a macro to sort the analytes into the order specified in row 6.</p> <p>Note that the "Congener Abbreviations" sheet (orange tab) contains a table listing the IUPAC names, CAS numbers, and common abbreviations. This sheet may be useful in matching the analyte names on the data reports to those in the data entry worksheet.</p> <p>After the sort is complete, check the order of the chemicals again to ensure they are listed in the correct order. This step can be repeated as many times as necessary.</p>
3	<p>In the "Data Entry & Output" worksheet, enter the congener data into Row A for each sample, along with any analytical qualifiers that have been assigned to the congener result. Enter the qualifier after the numeric value in the same cell. For non-detected results (including EMPC or EDL results), the detection limit should be entered for the numeric result along with the qualifiers as indicated below. <u>Note that this step will be performed automatically if the automated data entry macro is used.</u></p>
Entering data	<p>The Calculator recognizes the following qualifiers:</p> <ul style="list-style-type: none"> • J, E, or A: qualifiers used to indicate the congener result is considered estimated. • U or ND: indicates the congener was not detected in the sample. • Results flagged as "UJ" should be entered with a "U" qualifier. • R: indicates the sample result for the congener result was rejected.
Qualifier entry location	<p>The numeric portion of the result should be entered first, followed by the qualifier in the same cell. The qualifiers listed above are the only ones that should be used. It is not necessary to enter a space between the number and qualifier, but entering a space is also acceptable if the user prefers that approach.</p>
Pasting data	<p>If the user wishes to copy and paste data into the "Data Entry & Output" worksheet, the Paste Values option should be used. To paste values, select "Paste" on the Excel ribbon, then "Paste Special", then "Paste As Values". Note that Row B will be automatically populated by the macro. The user should not make any entries into this row.</p>
Combining cells in the source file	<p>The source file (an electronic database or spreadsheet file) from which the data are copied for pasting into the "Data Entry & Output" worksheet will usually have the numerical value in one column and any qualifier for that data value in the next column. In the TEQ calculator, the qualifier must follow the numerical result in the same column. To reduce manual data entry effort, use the Excel CONCATENATE function or the "&" (ampersand) operator to consolidate the numerical and qualifier cells of the source file into a single cell which can then be pasted directly into the calculator.</p>

EMPC or EDL qualifiers	Note that if values qualified as "estimated maximum possible concentration" (EMPC) or "estimated detection limit" (EDL) are present, these values should be entered into the TEQ calculator as nondetects (using a U or ND qualifier) with the numerical EMPC or EDL value as the detection limit. This will ensure that these values are subjected to the full sensitivity analysis as nondetects with a maximum value of the EMPC or EDL. See the EMPC discussion in the " KM Discussion " sheet for more information.
Coeluting analytes	If coeluting analytes are present in the sampling results, the user will need to adjust the data entry accordingly. One common coeluting pair is PCB-156 and PCB-157. In this specific case, the two congeners have the same TEF. Therefore, the data can be entered in the column for PCB-156, and the column for PCB-157 can be left blank. If coeluting analytes are reported which have different TEFs, it is suggested that the results be entered for the congener with the higher TEF. However, the user can perform a sensitivity analysis by entering the sample twice, once with the coeluting analyte result entered in each column. The project team should decide how to handle such situations.
4 Running the Calculate TEQ macro	<p>Run the macro by clicking on the beige box button labeled "Calculate TEQs" (see cells R1 through T1 of the sheet "Data Entry & Output" worksheet). The macro will calculate the toxicity equivalence concentration (TEC) for each congener (in Row C) and then transfer the TECs into the "KM intermediate auto-calc" worksheet (red tab) to calculate the TEQ. The macro will then transfer the TEQ result back to the "Data Entry & Output" worksheet. After the macro run is completed, examine Row D for each sample. If there are any samples with congeners that are outlined with a border, these are results for which the user will have the option to enter substitute ("donor") values from a comparable sample (follow the instructions below). If there are no samples with congeners outlined with a border, continue with Step 6.</p> <ul style="list-style-type: none"> • Values should not be entered for any cell that is not outlined with a border. The outlined cells will fall into two categories. One category is a ND result that is the highest TEC in the sample. The other is a rejected result. • Two options are available; option 2 is preferred over option 1. Option 1 should only be used if option 2 is not possible because an analytical result for that congener from another sample cannot be defensibly substituted. • OPTION 1: <ul style="list-style-type: none"> - Enter the same value from Row B into the boxed cell in Row D. - Enter "not possible" in column BD, Row C for the sample. • OPTION 2: <ul style="list-style-type: none"> - Examine the rest of the data set and look for samples with a congener profile and concentrations very similar to the sample in question. - Confirm that the problem congener is detected in that sample. If so, evaluate whether a substitution of the detected value from that sample (a "donor" sample) can defensibly be made for the U/ND. If there is more than one value that could be substituted for the U/ND, use the most conservative (i.e., highest) value. Note that the detected value should be less than or equal to the ND value. - If there is a value from another sample that can be substituted defensibly, enter that value into the boxed cell in Row D. - If there are no values from other samples that can be substituted defensibly, OR the user prefers to not use substituted ("donor") values, enter the same value from the Row B into the cell outlined with a border in Row D. <p>Repeat the substitution process for any other congeners in this sample that are outlined with a border, but DO NOT select substitute ("donor") values from more than 1 sample for each specific sample.</p> <p>In column BD, Row C for the sample, enter the sample ID used for substitute ("donor") values for this sample. Note that this is not necessary if Option 1 above was selected, since in this case, the "donor" value comes from the same sample. However, it will be required if Option 2 is used.</p>
"Donor" values	Repeat the congener substitution substeps of Step 4 for all samples.
5	Click on the box labeled "Calculate TEQs" (see cells R1 through T1 of the worksheet " Data Entry & Output "). This will initiate a macro that will copy the entered data to the " KM intermediate auto-calc " worksheet and display the returned results.
6	If any error messages are displayed to the user, examine column AN to see which samples have data entry errors, and correct them (see instructions 1 through 4).
7 "Select KM TEQ" box	The macro will automatically populate the method for calculating the KM TEQ in column AN "Select KM TEQ" in the uppermost gray cell. As a default, the method that provides the highest KM TEQ will be selected. The user may override this selection and choose another method for calculating the KM TEQ. When the user chooses another method for calculating the KM TEQ in column AM for a sample, the following will be automatically updated: the sample KM TEQ and the qualifiers in columns AL and AM.

Sensitivity Analysis Summary	Column AG provides a "Summary of the Sensitivity Analysis" for a single sample by calculating the relative percent difference (RPD) between the highest and the lowest TEQ results for that sample. This gives a sense of the "spread" of TEQ results obtained from the different ways ND congeners can be handled. When there are no ND congeners, all values will be exactly the same, and Column AG reports "no difference." If ND congeners are present in the sample, the highest result will be the value obtained by substituting congener DLs for NDs, and the lowest will come from substituting zero for the NDs. If these two results are very close, the RPD may round down to 0%. If the TEQ results are near a decision threshold and a non-zero %RPD is reported, closer examination of that sample is recommended. The equation used to calculate the relative percent difference is $RPD = ((HIGHEST\ TEQ - LOWEST\ TEQ) / AVERAGE\ OF\ HIGHEST\ \&\ LOWEST\ TEQs) \times 100$, and rounded to an integer.
"Locked" feature	There is another gray box directly below the gray KM TEQ selection box discussed above. Here the user has the option to select " Locked ", or leave the cell blank (i.e., unlocked). If "Locked" is selected, the selected KM TEQ option will not be changed when the macro is run again. This can be useful if the user wants to process a few samples at a time, but not lose their selected options for previously processed data. Unlocking: although a blank cell cannot be selected by the drop-down box, the "Locked" option can be removed by deleting the cell contents with the keyboard's DELETE button. If no rejected data are present and no samples have a non-detect for the highest TEC, the macro will select "Section 1" in column AN for all samples. If no rejected data are present and a sample does have a non-detect for the highest TEC, the macro will select either "Section 2 Treatment 1" or "Section 2 Treatment 2" in column AN, whichever is most conservative (highest KM TEQ). The other treatment should be selected if appropriate and justified (for example, if Section 2 Treatment 1 is selected by the macro, the user may select Section 2 Treatment 2 if it is appropriate and justified).
Rejected data	If rejected data are present, the macro will select "Section 3" followed by "Treatment 1", "Treatment 2", "Treatment 3", or "Treatment 4" in column AN, whichever is most conservative (highest KM TEQ). The most appropriate and justified TEQ should be selected, using the following considerations: The results of the different treatments for handling "R" data should be compared to the decision threshold or used to calculate risk using appropriate risk assessment methods. <ul style="list-style-type: none"> • If the choice of treatment (from more to less conservative) significantly changes the decision outcome, sample reanalysis is advisable. To avoid repeated generation of problematic data, ask the laboratory to take corrective action in the reanalysis.
Note 1	Note regarding TEQs in column AH: Note that the result for the "TEQs from Substitution" in column AH (where NDs are counted as zero) should be the same as the Total TEQ value that is reported on Contract Laboratory Program (CLP) forms (I-HR CDD-2).
Note 2	Note regarding sample qualifiers for KM TEQ results:
J-qualified TEQ	All KM calculations include a determination of the TEC contribution to the TEQ from congener results that are qualified as non-detect, estimated or rejected. If the contribution of these "qualified" TECs to the TEQ is greater than 50 percent, the KM TEQ result is qualified as "estimated, J". The qualifier is determined by the macro, and is shown in a cell in the appropriate Section and Treatment(s), along with the fraction of the TEQ from "qualified" TECs. If a "J" is not needed, that cell will be populated with " none ".
Note 3	Note regarding TEFs:
Adjusting TEFs	The TEFs used in the calculator are from the World Health Organization (WHO) 2005 report (Van den Berg 2006). If necessary, the user can change the TEF values to earlier values, or to updated values when they become available. The TEFs can also be adjusted for additional sensitivity analysis if desired. To update the TEFs, the user should unprotect the workbook, change the TEFs of concern and then rerun the macro.
Note 4	Note regarding minimum number of detected congeners:
Minimum number of congeners	There must be at least 3 detected congeners for the methodology in the KM TEQ calculator to be meaningful. If fewer than three detected congeners are present in the results for a sample entered into the calculator, an error message will be displayed to the user. No KM TEQ calculations will be conducted for that sample. "Not calculated" will be displayed in column AN, and a note will be displayed in column BE stating that fewer than three detected results were present. For discussion, refer to the worksheet " KM Discussion " under "Treatment of Nondetected Congeners."
Note 5	Note regarding dioxin/furan contributions to sample TEQ:
D/F vs PCB contributions to total TEQ	In column AO, the "Dioxin/Furan" label on the third line for each sample refers to the percentage of TEQ contributed from dioxins and furans (the number is reported in column AP). The remaining percentage (obtained by subtracting the D/F contribution from 100) is contributed from dioxin-like PCBs.

References

Helsel, D.R. 2009. "Summing Nondetects: Incorporating Low-Level Contaminants in Risk Assessment." Integrated Environmental Assessment and Management. Volume 6, Number 3. Pages 361 through 366.

Van den Berg, M. and others. 2006. "The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds." Toxicological Sciences. Volume 93, Number 2. Pages 223 through 241.
On-Line Address: <http://epa-prgs.ornl.gov/chemicals/help/documents/vandenberg2006.pdf>

For questions or suggestions about this Calculator, contact Deana Crumbling at USEPA, crumbling.deana@epa.gov, (703) 603-0643.

EPA Advanced KM TEQ Calculator

Discussion: Calculation of Total Dioxin TEQs with Nondetect and Rejected Congeners

Helsel's Kaplan-Meier Approach

Calculation of sums or totals for multi-constituent chemicals [e.g., total dioxin TEQs, total PCBs, total polycyclic aromatic hydrocarbons (PAHs), etc.] has typically involved simple substitution of zero, one-half the detection limit (DL), or the DL for left-censored (nondetect or less-than values) congeners. Because this practice introduces bias to estimates used in statistical calculations, however, many sources now strongly recommend against the use of arbitrary surrogate values for nondetects (Helsel 1990, 2005a, 2005b, 2009; EPA 2006, 2009a, 2009b).

Helsel (2009) describes an approach for calculating totals using the KM product limit estimator, which is based on the following relationship between the "mean" of the toxic equivalence concentrations (TECs) and total TEQ for samples containing multiple congeners:

$$\text{total concentration} = \text{"mean" TEC} \times n \quad (\text{where } n \text{ is the number of congeners})$$

Note that this "mean" TEC is an intermediate value in the calculation that has no relationship to a mean TEQ for replicate DU samples. The KM estimator is a nonparametric maximum likelihood estimator that has been widely used in survival and failure analysis for more than 50 years (Kaplan and Meier 1958, Klein and Moeschberger 2003, Meeker and Escobar 1998). The KM estimator has only recently come into use in environmental assessment studies (Helsel 2005a), and is currently a default method used in EPA's ProUCL software for calculating the 95% UCL of the mean for data with one or more censored results (EPA 2009a, 2009b).

Treatment of Nondetected Congeners

For the purposes of this dioxin reassessment UFP-QAPP template, the intermediate KM "mean" is recommended for use in calculating total dioxin TEQs, using the general equation presented above, in all cases where a) some fraction of the congeners are nondetect, and b) there are at least three detected congeners. Additional guidelines for calculating the KM intermediate "mean" are provided below. If all congeners are detected, then the intermediate "mean" calculated by the equation is the arithmetic average of all the congeners' TECs.

How many detected congeners are needed to calculate a TEQ?

If only one or two congeners are detected, then there is no statistically satisfactory method for calculating the dioxin TEQ that adequately accounts for the uncertainty introduced by nondetect congener results. In this case, the intermediate "mean" should be calculated as

the congener in question, substitution of a value (straight substitution, an average of several, or a maximum) from the other DUs may be made. Fortunately, many laboratories have lower detection limits for TCDD and TCDF than for the congeners with lower TEFs, and this somewhat mitigates this problem.

the arithmetical average, where simple substitution is used for nondetects. A quasi-sensitivity analysis approach is recommended, wherein substitution of both zero and the DL are used to calculate lower- and upper-bound estimates for the total TEQ. Compare the TEQs from both approaches to assess whether they have the same decision outcome. Substitution of one-half the DL can be used to calculate a "middle-of-the-road" value, although it should be acknowledged that the uncertainty of this estimate may be unacceptable for decision making.

In cases where critical decisions hinge on total TEQ estimates with mostly nondetect results, project teams are advised to consider

- consulting personnel with expertise in statistics,
- reanalyzing existing samples (if archived samples are available and meet holding times),
- comparing with the results from nearby similar DUs and the CSM, or
- collecting additional samples.

The stepwise KM approach for calculating the total dioxin TEQ for individual samples is described below:

- Step 1. Calculate the TEC for each congener by multiplying the results for individual congeners by their congener-specific TEF (van den Berg and others 2006). For nondetect congeners, the reporting limit or DL should be multiplied by the TEF.
- Step 2. Calculate the intermediate "mean" TEC for each sample using a KM calculator spreadsheet. If all the congeners are detected, then calculate the intermediate value as the arithmetic mean. If nondetects are present and at least three results are detected, calculate the KM intermediate using one of the options described below. If only one or two congeners are detected, use simple substitution and a quasi-sensitivity analysis approach, as discussed above.
- Step 3. Calculate the total dioxin TEQ using: Total TEQ = intermediate "mean" TEC x n, where n is the number of congeners in the calculation.

Helsel (2009) discusses several potential contraindications for calculation of the KM mean. The first concerns cases where only a single DL is used for all nondetect congeners. This is not expected to occur for calculation of total dioxin TEQs, since results for individual congeners are first multiplied by congener-specific TEFs. The second contraindication is when the maximum reported result is a nondetect, high-toxicity (i.e., TEF close to 1) congener. This is problematic, as the KM method will effectively ignore maximum results that are censored. Helsel (2009) suggests that the DL be substituted in these cases, but that it should be acknowledged that this represents a worst-case scenario. Another option is to compare the congener concentration and congener profile of the sample with a high TEF nondetect to results from similar (per the CSM) DUs. If the congener profiles are similar, but the other DUs have a detection for

- (3) Commercial or other statistical software. The KM model is included in many mainstream statistical software packages, as well as public domain (including the R language) programs. Helsel (2005a) discusses an approach for "flipping" data for

Helsel (2009) does not discuss the minimum number of detected results required to estimate the KM mean, but a practical minimum of three detected results is recommended. Cases where only one or two congeners are detected are discussed above. Lastly, Helsel (2009) recommends that for left-censored environmental data, Efron's method should always be used. This simply requires that the minimum result always be treated as a detected result. The manner in which Efron's method is incorporated in calculations of the KM mean depends on the specific software or approach used. For example, for programs that require a "flag" to distinguish between detected and nondetect data, one only needs to use the appropriate flag for detected data to qualify the minimum result(s).

Three options are described below for calculation of the KM mean:

- (1) Helsel's KM Excel spreadsheet model (available from www.practicalstats.com). This spreadsheet has been built into a workbook designed specifically for calculating the TEQ from raw data congener concentration data. Raw data are entered into one spreadsheet, which automatically calculates the toxic equivalent concentration (TEC) for each congener. The TECs are copied and pasted by a macro into a second spreadsheet in the workbook that performs the KM calculation. This produces an intermediate value (the KM "mean") which is transferred by the macro back to the first spreadsheet. The intermediate result is then automatically multiplied by the number of congeners to produce the total TEQ for the sample. Detailed instructions for using the spreadsheets are included in the Excel workbook's spreadsheets.
- (2) Alternatively, EPA's ProUCL software may be used. Before estimates of the KM intermediate "mean" TEC can be calculated, the congener concentration results (in ppt) must be converted to congener TECs by multiplying each congener by its TEF. This must be done independently before the TECs are put into ProUCL for the KM calculation. (ProUCL cannot do the TEC calculation.) The TECs are then entered into ProUCL and the KM intermediate "mean" is automatically calculated for data sets with one or more nondetect results. EPA (2009a, 2009b) should be consulted for instructions for entering data into ProUCL, since a coding procedure must be used in ProUCL to "tell it" which congener TECs were from ND values. Note that in order to use Efron's method, the minimum result should be coded as a detected result. If intermediate "means" are required for multiple samples, then each sample needs to be identified using a "grouping" variable (see EPA 2009a). For each sample, the KM intermediate "mean" will need to be extracted from the ProUCL report, and manually multiplied by the number of congeners to produce the total TEQ result for that sample.

Treatment of EMPC values and qualified data

EPA's Contract Laboratory Program Statement of Work (CLP SOW) for dioxin analysis specifies the reporting of detected congeners as "EMPC" values ("estimated maximum possible concentration") when a congener peak is present at an acceptable signal-to-noise ratio, but ion abundance criteria are not met for definitive identification of that congener. The CLP SOW excludes these values from the calculation of TEQ. EPA Method 8290A also specifies the reporting of EMPC values but makes no recommendations concerning their use in TEQ calculations. EMPC values are generally qualified as estimated concentrations ("J") or nondetect values ("U") during data validation in accordance with EPA Functional Guidelines. When qualified "J", EMPC values can be applied along with other J-qualified congener results in TEQ calculation and risk assessment (T

use in commercial packages, which emphasize treatment of right-censored data. Experienced users may elect to use alternative approaches for calculation of the KM intermediate "mean," but must use methods employing Efron's method, and must demonstrate that results are comparable to the intermediate "means" calculated using Options (1) or (2) above.

Treatment of R-Qualified Congeners

One additional component for assessing the uncertainty of estimates of the intermediate KM "mean" and total TEQ, concerns treatment of rejected (R-qualified) data. It is possible to reject individual congener analytes based on ion abundance, the signal-to-noise ratio, relative retention time, a low laboratory control sample result, gross blank contamination, or other analyte-specific criteria. For non-dioxin individual chemicals with multiple-sample sets (i.e., sufficient sample-sizes to support calculations), rejected data are always excluded from calculations in environmental assessments. However, for calculation of the "mean" (and total) for a set of congeners, there is concern that exclusion of rejected data may bias estimates low or create a need for replacement data (resampling or reanalysis). The magnitude (and importance) of this bias will of course depend on the values reported for R-qualified data and the overall dioxin concentration in relation to decision-making thresholds, as well as the congener-specific TEFs.

Although rejected data should not be included in final calculations of TEQ for a given sampling or decision unit, rejected data values (concentrations or detection limits) can be included in KM "mean" and total TEQ calculations early in the data evaluation process. These TEQs can be compared to TEQs calculated with the rejected values removed. This quasi-sensitivity approach, similar to that recommended above for nondetect values, will assist project teams in assessing the magnitude of impacts from rejected data and the need for replacement data (Replacement data may require reanalysis of samples at the laboratory, with laboratory corrective actions or method refinements as needed, or the collection of additional samples from the site). Rejected data can be further evaluated through professional judgment, such as whether a rejected congener may be present at a concentration that could affect the TEQ based on historical site information or data from surrounding decision units. For example, project teams could use the KM calculator to further assess how high the concentration of a rejected congener would have to be to affect the TEQ, and then compare this estimate to concentrations for this congener that are present in other decision units, or in comparable historical data sets.

(continued)

Kaplan, E.L., and P. Meier. 1958. "Nonparametric Estimator from Incomplete Observations." *Journal of the American Statistical Association*. Volume 53. Pages 457 through 481.

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Meeker, W.Q., and L.A. Escobar. 1998. *Statistical Methods for Reliability Data*. Wiley Series in Probability and Statistics. John Wiley & Sons, Inc. New York, New York. 712 pages.

with other J-qualified congener results in TEQ calculation and risk assessment (J-qualified data are generally applied like unqualified data under EPA risk assessment protocols). EMPC values qualified "U" can be treated as other nondetect values using the KM approach described above. Given that use of EMPC values may overestimate the TEQ and associated dioxin risk, project teams may again elect to perform a quasi-sensitivity analysis by calculating TEQ without the EMPC values. As for rejected data, significant effects from EMPC values may require corrective action to improve data quality (such as sample reanalysis).

Therefore, for congeners that are influential (high-toxicity, TEF close to 1, or high concentration) in calculations of the intermediate "mean" and total TEQ, rejected and qualified data may require further evaluation by project teams. The uncertainty of calculating total TEQs, as can be demonstrated through sensitivity analyses, should be addressed in the uncertainty section of assessment documents, and taken into account in decision making.

References

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name: Strecker Forest Remedial Action
 Matrix: Soil Data entered by: R. Tisdale
 Units: PG/G Date entered: 8/7/2014

protect/unprotect sheet password = dioxin

SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF
47 SFRA-147: Row A	335	2.14 U	4.47 U	7.03 U	4.53 U	106	4940	3.93 J	4.24 U	1.81 U	2.32 U	2.19 U	3.71 U	2.37 U	21.5 J	6.79 U
value to use: Row B	335	2.14	4.47	7.03	4.53	106	4940	3.93	4.24	1.81	2.32	2.19	3.71	2.37	21.5	6.79
congener TEC: Row C	335	2.14	0.447	0.703	0.453	1.06	1.482	0.393	0.1272	0.543	0.232	0.219	0.371	0.237	0.215	0.0679
donor value to use: Row D																
donor TEC: Row E																
48 SFRA-148: Row A	24400	32.5 U	62.6 U	139 J	62.1 U	1420	16000	163	22.5 U	20.8 U	39.3 J	25.1 U	34.1 U	33.2 J	491 J	91.5 U
value to use: Row B	24400	32.5	62.6	139	62.1	1420	16000	163	22.5	20.8	39.3	25.1	34.1	33.2	491	91.5
congener TEC: Row C	24400	32.5	6.26	13.9	6.21	14.2	4.8	16.3	0.675	6.24	3.93	2.51	3.41	3.32	4.91	0.915
donor value to use: Row D																
donor TEC: Row E																
49 SFRA-149: Row A	11300	14.8 U	24 U	25.1 J	24.2 U	562	8990	73.6 J	13.2 U	11.7 U	16.5 U	14 U	25.4 U	17.9 U	160 J	44.4 U
value to use: Row B	11300	14.8	24	25.1	24.2	562	8990	73.6	13.2	11.7	16.5	14	25.4	17.9	160	44.4
congener TEC: Row C	11300	14.8	2.4	2.51	2.42	5.62	2.697	7.36	0.396	3.51	1.65	1.4	2.54	1.79	1.6	0.444
donor value to use: Row D																
donor TEC: Row E																
50 SFRA-150: Row A	1770	1.72 J	2.4 U	21.2 J	7.93 J	411	7850	15.8	3.83 J	2.32 J	9.11 J	3.06 J	3.29 U	4.74 J	86.9	6.44 J
value to use: Row B	1770	1.72	2.4	21.2	7.93	411	7850	15.8	3.83	2.32	9.11	3.06	3.29	4.74	86.9	6.44
congener TEC: Row C	1770	1.72	0.24	2.12	0.793	4.11	2.355	1.58	0.1149	0.696	0.911	0.306	0.329	0.474	0.869	0.0644
donor value to use: Row D																
donor TEC: Row E																
51 SFRA-151: Row A	15.8	1.12 U	1.77 U	1.6 U	1.75 U	32.8 J	2290	1.28 U	0.745 U	0.645 U	0.953 U	0.863 U	1.48 U	0.963 U	4.73 J	2.43 U
value to use: Row B	15.8	1.12	1.77	1.6	1.75	32.8	2290	1.28	0.745	0.645	0.953	0.863	1.48	0.963	4.73	2.43
congener TEC: Row C	15.8	1.12	0.177	0.16	0.175	0.328	0.687	0.128	0.02235	0.1935	0.0953	0.0863	0.148	0.0963	0.0473	0.0243
donor value to use: Row D																
donor TEC: Row E																
52 SFRA-152: Row A	1.6 U	0.99 U	1.55 U	1.46 U	1.58 U	9.72 J	329	1.15 U	0.632 U	0.597 U	0.922 U	0.875 U	1.58 U	0.971 U	1.6 J	2.52 U
value to use: Row B	1.6	0.99	1.55	1.46	1.58	9.72	329	1.15	0.632	0.597	0.922	0.875	1.58	0.971	1.6	2.52
congener TEC: Row C	1.6	0.99	0.155	0.146	0.158	0.0972	0.0987	0.115	0.01896	0.1791	0.0922	0.0875	0.158	0.0971	0.016	0.0252
donor value to use: Row D																
donor TEC: Row E																
53 SFRA-153: Row A	1.62 U	1.15 U	1.49 U	1.43 U	1.54 U	6.58 J	414	1.23 U	0.569 J	0.482 U	0.874 U	0.783 U	1.38 U	0.927 U	1.2 U	1.96 U
value to use: Row B	1.62	1.15	1.49	1.43	1.54	6.58	414	1.23	0.569	0.482	0.874	0.783	1.38	0.927	1.2	1.96
congener TEC: Row C	1.62	1.15	0.149	0.143	0.154	0.0658	0.1242	0.123	0.01707	0.1446	0.0874	0.0783	0.138	0.0927	0.012	0.0196
donor value to use: Row D																
donor TEC: Row E																
54 SFRA-154: Row A	1.11 U	0.769 U	1.33 U	1.24 U	1.35 U	21.3 J	755	1.05 U	0.533 U	0.483 U	0.629 U	0.607 U	1.04 U	0.636 U	1.88 J	1.67 U
value to use: Row B	1.11	0.769	1.33	1.24	1.35	21.3	755	1.05	0.533	0.483	0.629	0.607	1.04	0.636	1.88	1.67
congener TEC: Row C	1.11	0.769	0.133	0.124	0.135	0.213	0.2265	0.105	0.01599	0.1449	0.0629	0.0607	0.104	0.0636	0.0188	0.0167
donor value to use: Row D																
donor TEC: Row E																
SFRA-155: Row A	0.75 U	0.857 U	1.37 U	1.29 U	1.41 U	7.01 J	161	1.62 J	0.843 J	0.726 U	0.837 U	0.801 U	1.3 U	0.879 U	2.42 J	1.86 U
value to use: Row B	0.75	0.857	1.37	1.29	1.41	7.01	161	1.62	0.843	0.726	0.837	0.801	1.3	0.879	2.42	1.86

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name:	Strecker Forest Remedial Action		
Matrix:	Soil	Data entered by:	R. Tisdale
Units:	PG/G	Date entered:	8/7/2014

protect/unprotect sheet password = dioxin

SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF
Sample notes	donor TEC: Row E															
64	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E															
65	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E															
66	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E															
67	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E															
68	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E															
69	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E															
70	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E															

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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Project Name:	Strecker Forest Remedial Action		
Matrix:	Soil	Data entered by:	R. Tisdale
Units:	PG/G	Date entered:	8/7/2014

protect/unprotect sheet password = dioxin

SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name:	Strecker Forest Remedial Action		
Matrix:	Soil	Data entered by:	R. Tisdale
Units:	PG/G	Date entered:	8/7/2014

protect/unprotect sheet password = dioxin

SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample ID:
(must enter on Row A)

OCDF

Summary of
Sensitivity
Analysis
(relative
percent
difference)

U = 0 &
sum U = 1/2 DL
& sum U = DL &
sum

Sample KM
TEQ Qualifier Select KM TEQ

KM TEQ Qualifier and Qualifier
Fractions

KM TEQ Qualifier and
Qualifier Fractions

Sample notes

1

SFRA-100: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

324 J
324
0.0972

0%

13834.7632 13844.3582 13853.9531

13840.1627 none Section 1

13840.1627 none
Qualified 0%
Dioxin/Furan 100%

2

SFRA-101: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

175
175
0.0525

0%

3049.6780 3050.1723 3050.6666

3050.0756 none Section 1

3050.0756 none
Qualified 0%
Dioxin/Furan 100%

3

SFRA-102: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

142 J
142
0.0426

0%

3951.8829 3952.0059 3952.1289

3952.0064 none Section 1

3952.0064 none
Qualified 1%
Dioxin/Furan 100%

4

SFRA-103: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

109 J
109
0.0327

0%

3107.5925 3109.6286 3111.6647

3108.8508 none Section 1

3108.8508 none
Qualified 0%
Dioxin/Furan 100%

5

SFRA-104: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

50.6 J
50.6
0.01518

1%

614.94818 617.40833 619.86848

615.7831 none Section 1

615.7831 none
Qualified 1%
Dioxin/Furan 100%

6

SFRA-105: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

8.6 J
8.6
0.00258

1%

182.11118 183.083235 184.05529

182.3636 none Section 1

182.3636 none
Qualified 1%
Dioxin/Furan 100%

7

SFRA-106: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

371 J
371
0.1113

0%

13944.5723 13956.8623 13969.1523

13949.1495 none Section 1

13949.1495 none
Qualified 0%
Dioxin/Furan 100%

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

		WHO 2005 TEFs = 0.0003		Summary of Sensitivity Analysis (relative percent difference)			TEQs from Substitution			KM Method			(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 1	
													Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values	
													Treatment 1		Treatment 1: Make highest U value a D	
Sample notes	Sample ID: (must enter on Row A)	OCDF				U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	
8	SFRA-107: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	138 138 0.0414	0%			1039.4024	1041.7715	1044.1405	1040.4226	none	Section 1	1040.4226 Qualified Dioxin/Furan	none 1% 100%			
9	SFRA-108: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	44.4 J 44.4 0.01332	0%			961.9863	963.0827	964.1791	962.4726	none	Section 1	962.4726 Qualified Dioxin/Furan	none 0% 100%			
10	SFRA-109: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	307 J 307 0.0921	0%			14227.3521	14236.0200	14244.6878	14230.6860	none	Section 1	14230.6860 Qualified Dioxin/Furan	none 0% 100%			
11	SFRA-110: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	1190 1190 0.357	No difference			2811.1290	2811.1290	2811.1290	2811.1290	none	Section 1	2811.1290 Qualified Dioxin/Furan	none 1% 100%			
12	SFRA-111: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	511 511 0.1533	0%			1556.6234	1556.7209	1556.8184	1556.7551	none	Section 1	1556.7551 Qualified Dioxin/Furan	none 1% 100%			
13	SFRA-112: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	451 451 0.1353	0%			7717.9793	7729.3701	7740.7609	7721.9118	none	Section 1	7721.9118 Qualified Dioxin/Furan	none 0% 100%			
14	SFRA-113: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	15.2 J 15.2 0.00456	1%			180.67846	181.810435	182.94241	181.0324	none	Section 1	181.0324 Qualified Dioxin/Furan	none 1% 100%			

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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Chemical Sort Order: 17

		WHO 2005 TEFs = 0.0003		Summary of Sensitivity Analysis (relative percent difference)			TEQs from Substitution			KM Method			(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 1	
													Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values	
													Treatment 1		Treatment 1: Make highest U value a D	
Sample notes	Sample ID: (must enter on Row A)	OCDF		U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Fractions	KM TEQ	Qualifier and Fractions	KM TEQ	Qualifier and Fractions	
15	SFRA-114: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	28.6 J 28.6 0.00858	1%	355.4196	356.9258	358.4320	355.9356	none	Section 1	355.9356	none Qualified 1% Dioxin/Furan 100%					
16	SFRA-115: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	54.9 J 54.9 0.01647	1%	416.4425	417.9416	419.4408	416.9718	none	Section 1	416.9718	none Qualified 1% Dioxin/Furan 100%					
17	SFRA-116: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	132 132 0.0396	0%	868.5279	869.0529	869.5779	868.8084	none	Section 1	868.8084	none Qualified 1% Dioxin/Furan 100%					
18	SFRA-117: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	474 474 0.1422	0%	1198.9122	1199.2117	1199.5112	1199.1615	none	Section 1	1199.1615	none Qualified 2% Dioxin/Furan 100%					
19	SFRA-118: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	255 255 0.0765	0%	1159.3823	1160.9233	1162.4643	1160.0608	none	Section 1	1160.0608	none Qualified 1% Dioxin/Furan 100%					
20	SFRA-119: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	75.4 J 75.4 0.02262	0%	596.8942	598.3757	599.8572	597.4638	none	Section 1	597.4638	none Qualified 1% Dioxin/Furan 100%					
21	SFRA-120: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	119 119 0.0357	0%	676.7131	678.196425	679.67975	677.3763	none	Section 1	677.3763	none Qualified 1% Dioxin/Furan 100%					
22	SFRA-121: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	204 204 0.0612	0%	1576.802	1578.9859	1581.1698	1577.7476	none	Section 1	1577.7476	none Qualified 1% Dioxin/Furan 100%					

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WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample notes

Sample ID:
(must enter on Row A)

OCDF

Summary of
Sensitivity
Analysis
(relative
percent
difference)

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

23

SFRA-122: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

111 J
111
0.0333

2%

257.3543 260.0748 262.7952

257.9144

none

Section 1

257.9144

none

Qualified
Dioxin/Furan

3%
100%

24

SFRA-123: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

66.7 J
66.7
0.02001

1%

416.7350 419.4063 422.0776

417.5583

none

Section 1

417.5583

none

Qualified
Dioxin/Furan

1%
100%

25

SFRA-124: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

30.7 J
30.7
0.00921

6%

69.4292 71.3963 73.3633

69.7981

none

Section 1

69.7981

none

Qualified
Dioxin/Furan

7%
100%

26

SFRA-125: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

385
385
0.1155

2%

497.8625 501.7280 505.5935

500.1206

none

Section 1

500.1206

none

Qualified
Dioxin/Furan

3%
100%

27

SFRA-126: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

689
689
0.2067

1%

921.7337 925.6532 929.5727

924.5529

none

Section 1

924.5529

none

Qualified
Dioxin/Furan

2%
100%

28

SFRA-127: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

82.6 J
82.6
0.02478

5%

163.1588 167.4188 171.6788

164.0034

none

Section 1

164.0034

none

Qualified
Dioxin/Furan

6%
100%

29

SFRA-129: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

116 J
116
0.0348

2%

384.9798 388.12445 391.2691

386.1815

none

Section 1

386.1815

none

Qualified
Dioxin/Furan

2%
100%

30

SFRA-130: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

91.7 J
91.7
0.02751

1%

527.38151 529.75281 532.12411

528.0573

none

Section 1

528.0573

none

Qualified
Dioxin/Furan

1%
100%

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		WHO 2005 TEFs = 0.0003				Summary of Sensitivity Analysis (relative percent difference)			TEQs from Substitution			KM Method			(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 1	
															Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values	
															Treatment 1		Treatment 1: Make highest U value a D	
Sample notes	Sample ID: (must enter on Row A)	OCDF	U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions
31	SFRA-131: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	470 J 470 0.141	0%	10531.3210	10552.7450	10574.1690	10537.0846	none	Section 1	10537.0846	none	Qualified 0% Dioxin/Furan 100%						
32	SFRA-132: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	312 J 312 0.0936	0%	4862.7716	4870.0376	4877.3035	4865.2640	none	Section 1	4865.2640	none	Qualified 0% Dioxin/Furan 100%						
33	SFRA-133: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	259 J 259 0.0777	0%	5748.7477	5757.2013	5765.6549	5750.9346	none	Section 1	5750.9346	none	Qualified 0% Dioxin/Furan 100%						
34	SFRA-134: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	522 522 0.1566	1%	844.4706	848.5871	852.7036	846.7147	none	Section 1	846.7147	none	Qualified 3% Dioxin/Furan 100%						
35	SFRA-135: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	539 539 0.1617	1%	362.4997	365.1517	367.8037	364.3311	none	Section 1	364.3311	none	Qualified 5% Dioxin/Furan 100%						
36	SFRA-136: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	495 495 0.1485	0%	320.3785	320.9265	321.4745	320.8055	none	Section 1	320.8055	none	Qualified 5% Dioxin/Furan 100%						
37	SFRA-137: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	839 839 0.2517	2%	270.4397	273.3542	276.2687	272.4219	none	Section 1	272.4219	none	Qualified 7% Dioxin/Furan 100%						
38	SFRA-138: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	21.9 U 21.9 0.00657	1%	744.6715	747.461085	750.25067	745.3559	none	Section 1	745.3559	none	Qualified 1% Dioxin/Furan 100%						

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Analysis
(relative
percent
difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and
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Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample ID:
(must enter on Row A)

OCDF

Summary of
Sensitivity
Analysis
(relative
percent
difference)

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

Sample notes

39

SFRA-139: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

323 J
323
0.0969

0%

8394.5979

8396.4667

8398.3355

8395.3001

none

Section 1

8395.3001

none

Qualified
Dioxin/Furan

0%
100%

40

SFRA-140: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

350 J
350
0.105

0%

8247.1150

8254.5091

8261.9032

8251.4853

none

Section 1

8251.4853

none

Qualified
Dioxin/Furan

1%
100%

41

SFRA-141: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

214 J
214
0.0642

0%

3468.4732

3474.9986

3481.5240

3470.3622

none

Section 1

3470.3622

none

Qualified
Dioxin/Furan

1%
100%

42

SFRA-142: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

259 J
259
0.0777

1%

4097.5777

4108.5847

4119.5916

4102.7274

none

Section 1

4102.7274

none

Qualified
Dioxin/Furan

1%
100%

43

SFRA-143: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

966
966
0.2898

0%

14957.6898

14975.7233

14993.7568

14965.9222

none

Section 1

14965.9222

none

Qualified
Dioxin/Furan

0%
100%

44

SFRA-144: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

122 J
122
0.0366

1%

3115.2666

3125.1072

3134.9478

3117.5158

none

Section 1

3117.5158

none

Qualified
Dioxin/Furan

1%
100%

45

SFRA-145: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

302 J
302
0.0906

1%

5712.3506

5727.8636

5743.3766

5716.1866

none

Section 1

5716.1866

none

Qualified
Dioxin/Furan

1%
100%

46

SFRA-146: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

307 J
307
0.0921

1%

3587.8921

3602.4021

3616.9121

3592.1679

none

Section 1

3592.1679

none

Qualified
Dioxin/Furan

1%
100%

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

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Analysis
(relative
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difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample notes

Sample ID:
(must enter on Row A)

OCDF

Summary of
Sensitivity
Analysis
(relative
percent
difference)

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

SFRA-147: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

32.6 J
32.6
0.00978

2%

338.1598

340.9298

343.6999

339.0699

none

Section 1

339.0699

none
Qualified 2%
Dioxin/Furan 100%

SFRA-148: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

521 J
521
0.1563

0%

24461.5163

24490.8763

24520.2363

24473.4923

none

Section 1

24473.4923

none
Qualified 0%
Dioxin/Furan 100%

SFRA-149: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

194 J
194
0.0582

0%

11319.8452

11335.5202

11351.1952

11324.3458

none

Section 1

11324.3458

none
Qualified 0%
Dioxin/Furan 100%

SFRA-150: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

164
164
0.0492

0%

1786.1625

1786.4470

1786.7315

1786.3608

none

Section 1

1786.3608

none
Qualified 0%
Dioxin/Furan 100%

SFRA-151: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

8.65 J
8.65
0.002595

13%

16.8649

18.0779

19.2909

17.0736

none

Section 1

17.0736

none
Qualified 15%
Dioxin/Furan 100%

SFRA-152: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

6.52 U
6.52
0.001956

180%

0.2119

2.1239

4.0359

1.9025

J

Section 2, Treatment 1

1.9025

J
Qualified 98%
Dioxin/Furan 100%

SFRA-153: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

5.42 U
5.42
0.001626

181%

0.2071

2.1637

4.1203

1.9307

J

Section 2, Treatment 1

1.9307

J
Qualified 97%
Dioxin/Furan 100%

SFRA-154: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

4.04 U
4.04
0.001212

151%

0.4583

1.8813

3.3043

1.5490

J

Section 2, Treatment 1

1.5490

J
Qualified 93%
Dioxin/Furan 100%

SFRA-155: Row A
value to use: Row B

4.47 J
4.47

EPA Advanced KM TEQ Calculator

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Chemical Sort Order: 17

		(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 2								
		Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values								
		Treatment 1		Treatment 1: Make highest U value a D								
		Qualifier and Qualifier Fractions		Qualifier and Qualifier Fractions								
Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution			KM Method			KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions
U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions			
55	WHO 2005 TEFs = 0.0003 congener TEC: Row C 0.001341 donor value to use: Row D donor TEC: Row E	160%	0.3312	1.6473	2.9633	1.4645	J	Section 2, Treatment 1	1.4645	J	Qualified 98% Dioxin/Furan 100%	
56	SFRA-156: Row A value to use: Row B 405 congener TEC: Row C 0.1215 donor value to use: Row D donor TEC: Row E	4%	101.3365	103.4613	105.5861	102.8185	none	Section 1	102.8185	none	Qualified 12% Dioxin/Furan 100%	
57	SFRA-157: Row A value to use: Row B 351 J congener TEC: Row C 0.1053 donor value to use: Row D donor TEC: Row E	0%	7168.9053	7180.1504	7191.3955	7172.8649	none	Section 1	7172.8649	none	Qualified 1% Dioxin/Furan 100%	
58	SFRA-158: Row A value to use: Row B 177 J congener TEC: Row C 0.0531 donor value to use: Row D donor TEC: Row E	0%	3381.5391	3389.1599	3396.7806	3383.5496	none	Section 1	3383.5496	none	Qualified 1% Dioxin/Furan 100%	
59	SFRA-159: Row A value to use: Row B 208 congener TEC: Row C 0.0624 donor value to use: Row D donor TEC: Row E	1%	288.3710	290.5019	292.6328	289.5876	none	Section 1	289.5876	none	Qualified 3% Dioxin/Furan 100%	
60	SFRA-160: Row A value to use: Row B 76.3 J congener TEC: Row C 0.02289 donor value to use: Row D donor TEC: Row E	0%	2370.3949	2373.5475	2376.7002	2371.7846	none	Section 1	2371.7846	none	Qualified 0% Dioxin/Furan 100%	
61	SFRA-161: Row A value to use: Row B 114 congener TEC: Row C 0.0342 donor value to use: Row D donor TEC: Row E	1%	346.8892	349.3512	351.8131	347.8776	none	Section 1	347.8776	none	Qualified 2% Dioxin/Furan 100%	
62	SFRA-162: Row A value to use: Row B 68.9 J congener TEC: Row C 0.02067 donor value to use: Row D donor TEC: Row E	0%	1120.7154	1122.1772	1123.6390	1121.3201	none	Section 1	1121.3201	none	Qualified 1% Dioxin/Furan 100%	
63	SFRA-163: Row A value to use: Row B 8.09 J congener TEC: Row C 0.002427 donor value to use: Row D	39%	4.8290	6.0144	7.1997	5.0892	none	Section 1	5.0892	none	Qualified 40%	

Sample notes

55

56

57

58

59

60

61

62

63

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Analysis
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TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity /

Highest TEC value is a DETECT, and
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Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample ID:
(must enter on Row A)

OCDF

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

donor TEC: Row E

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

Dioxin/Furan

100%

Sample notes

64

65

66

67

68

69

70

DATA LIST

List of TEQ results to copy and paste into

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

Sample ID:
(must enter on Row A)

OCDF

TEQs from Substitution

KM Method

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity /

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

Sample notes

other spreadsheets, such as ProUCL

CAUTION: double-check entries and gray cells for
anomalous entries

Line	Sample ID	TEQ Result	Qualifier
Line #1	SFRA-100	13840.1627	
Line #2	SFRA-101	3050.0756	
Line #3	SFRA-102	3952.0064	
Line #4	SFRA-103	3108.8508	
Line #5	SFRA-104	615.7831	
Line #6	SFRA-105	182.3636	
Line #7	SFRA-106	13949.1495	
Line #8	SFRA-107	1040.4226	
Line #9	SFRA-108	962.4726	
Line #10	SFRA-109	14230.6860	
Line #11	SFRA-110	2811.1290	
Line #12	SFRA-111	1556.7551	
Line #13	SFRA-112	7721.9118	
Line #14	SFRA-113	181.0324	
Line #15	SFRA-114	355.9356	
Line #16	SFRA-115	416.9718	
Line #17	SFRA-116	868.8084	
Line #18	SFRA-117	1199.1615	
Line #19	SFRA-118	1160.0608	
Line #20	SFRA-119	597.4638	
Line #21	SFRA-120	677.376285	
Line #22	SFRA-121	1577.74761	
Line #23	SFRA-122	257.914443	
Line #24	SFRA-123	417.558311	
Line #25	SFRA-124	69.7980853	
Line #26	SFRA-125	500.120635	
Line #27	SFRA-126	924.552857	
Line #28	SFRA-127	164.003403	
Line #29	SFRA-129	386.181536	
Line #30	SFRA-130	528.057292	
Line #31	SFRA-131	10537.0846	
Line #32	SFRA-132	4865.264	
Line #33	SFRA-133	5750.93465	
Line #34	SFRA-134	846.71469	
Line #35	SFRA-135	364.3311	
Line #36	SFRA-136	320.8055	
Line #37	SFRA-137	272.421945	
Line #38	SFRA-138	745.355878	

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-100: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-101: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-102: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-103: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-104: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-105: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-106: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-107: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-108: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-109: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-110: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-111: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-112: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-113: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-114: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-115: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-116: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-117: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-118: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-119: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-120: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-121: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-122: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-123: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-124: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-125: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-126: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-127: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-129: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-130: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-131: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-132: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-133: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-134: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-135: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-136: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-137: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-138: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-139: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-140: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-141: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-142: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-143: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-144: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-145: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-146: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	KM TEQ	Qualifier and Qualifier Fractions
SFRA-147: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-148: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-149: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-150: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-151: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-152: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	1.9025 Qualified Dioxin/Furan	J 98% 100%
SFRA-153: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	1.9307 Qualified Dioxin/Furan	J 97% 100%
SFRA-154: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	1.5490 Qualified Dioxin/Furan	J 93% 100%
SFRA-155: Row A value to use: Row B		

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performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	KM TEQ	Qualifier and Qualifier Fractions
55 congener TEC: Row C donor value to use: Row D donor TEC: Row E	1.4645 Qualified Dioxin/Furan	J 98% 100%
56 SFRA-156: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
57 SFRA-157: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
58 SFRA-158: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
59 SFRA-159: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
60 SFRA-160: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
61 SFRA-161: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
62 SFRA-162: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
63 SFRA-163: Row A value to use: Row B congener TEC: Row C donor value to use: Row D		

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Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
donor TEC: Row E		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order:
WHO 2005 TEFs =

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Treatment 2:
Substitute comparable "donor"
value for highest U

Sample notes

Sample ID:
(must enter on Row A)

Qualifier and
KM TEQ Qualifier Fractions

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order:
WHO 2005 TEFs =

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Treatment 2:
Substitute comparable "donor"
value for highest U

Sample notes

Sample ID:
(must enter on Row A)

Qualifier and
KM TEQ Qualifier Fractions

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values
--	---	--	--

Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--	--

SFRA-100: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-101: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-102: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-103: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-104: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-105: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-106: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	Will sample reanalysis be requested?	Sample ID used for "donor" values
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Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--	--

SFRA-107: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

--	--	--	--	--	--	--	--	--	--

SFRA-108: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

--	--	--	--	--	--	--	--	--	--

SFRA-109: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

--	--	--	--	--	--	--	--	--	--

SFRA-110: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

--	--	--	--	--	--	--	--	--	--

SFRA-111: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

--	--	--	--	--	--	--	--	--	--

SFRA-112: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

--	--	--	--	--	--	--	--	--	--

SFRA-113: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	
---	--	---	---	--

Sample notes

Sample ID: (must enter on Row A)	Treatment 1		Treatment 2		Treatment 3		Treatment 4		Will sample reanalysis be requested?	Sample ID used for "donor" values
	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions		
SFRA-114: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-115: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-116: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-117: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-118: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-119: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-120: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-121: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										

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EPA Advanced KM TEQ Calculator

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performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	Sample ID used for "donor" values
--	---	--	--	--

Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--

SFRA-122: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-123: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-124: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-125: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-126: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-127: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-129: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-130: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values
--	---	--	--

Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--	--

SFRA-147: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-148: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-149: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-150: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-151: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-152: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-153: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-154: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-155: Row A
value to use: Row B

47

48

49

50

51

52

53

54

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values
--	---	--	--

Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--	--

55

congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

56

SFRA-156: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

57

SFRA-157: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

58

SFRA-158: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

59

SFRA-159: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

60

SFRA-160: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

61

SFRA-161: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

62

SFRA-162: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

63

SFRA-163: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values
--	---	--	--

Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--	--

donor TEC: Row E

64

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

65

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

66

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

67

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

68

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

69

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

70

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Sample ID:

(must enter on Row A)

Sample notes

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	Will sample reanalysis be requested?	Sample ID used for "donor" values
KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions		

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Sample ID:

(must enter on Row A)

Sample notes

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	Will sample reanalysis be requested?	Sample ID used for "donor" values
KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions		

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

1

SFRA-100: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

2

SFRA-101: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

3

SFRA-102: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

4

SFRA-103: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

5

SFRA-104: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

6

SFRA-105: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

7

SFRA-106: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

8

SFRA-107: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

9

SFRA-108: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

10

SFRA-109: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

11

SFRA-110: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

12

SFRA-111: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

13

SFRA-112: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

14

SFRA-113: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

15

SFRA-114: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

16

SFRA-115: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

17

SFRA-116: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

18

SFRA-117: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

19

SFRA-118: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

20

SFRA-119: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

21

SFRA-120: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

22

SFRA-121: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

23

SFRA-122: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

24

SFRA-123: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

25

SFRA-124: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

26

SFRA-125: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

27

SFRA-126: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

28

SFRA-127: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

29

SFRA-129: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

30

SFRA-130: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

31

SFRA-131: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

32

SFRA-132: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

33

SFRA-133: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

34

SFRA-134: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

35

SFRA-135: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

36

SFRA-136: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

37

SFRA-137: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

38

SFRA-138: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

39

SFRA-139: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

40

SFRA-140: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

41

SFRA-141: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

42

SFRA-142: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

43

SFRA-143: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

44

SFRA-144: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

45

SFRA-145: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

46

SFRA-146: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

47

SFRA-147: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

48

SFRA-148: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

49

SFRA-149: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

50

SFRA-150: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

51

SFRA-151: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

52

SFRA-152: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

53

SFRA-153: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

54

SFRA-154: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-155: Row A
value to use: Row B

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

55

Sample ID:
(must enter on Row A)

Comment

congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

56

SFRA-156: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

57

SFRA-157: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

58

SFRA-158: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

59

SFRA-159: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

60

SFRA-160: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

61

SFRA-161: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

62

SFRA-162: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

63

SFRA-163: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

donor TEC: Row E

64

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

65

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

66

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

67

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

68

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

69

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

70

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

EPA Advanced KM TEQ Calculator

Automated Data Entry Worksheet

This worksheet is the data entry point for data sets that the user wants to automatically import into the "Data Entry and Output" worksheet. Users should copy data from a comma-delimited file or other text file, Excel worksheet, or other output from a database query and paste it into the table below, then click the "Transfer Data" button above to transfer the formatted data to the "Data Entry & Output" worksheet. The source data should be arranged in columns identical to the order of columns shown below before copying the data into the table. Excel's "Paste Values" tool can also be used to preserve the formatting of the table.

The fields designated as "required" must be included in the data query. The fields designated as "optional" should either contain the data specified, or may be left blank. The fields in Columns G and H will be automatically populated by the macro. The data query may include a field that specifies the order that the samples will appear in the "Data Entry & Output" worksheet. If this field is left blank, the importation macro will sort on the sample ID instead. Note that if the sample order is omitted, the sample IDs will be sorted as text values, and may not sort samples in numerical order as expected (for example: 1, 10, 11, 2, 3, 4, 5, 6, 7, 8, 9 instead of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11). Note that the user should ensure that the "Data Entry & Output" worksheet has enough samples for the sample data set being imported. See the "Instructions" worksheet for guidance on adding samples.

The "Congener Name" field in Column C is intended to be the name used by the project team in order to preserve project sample nomenclature. The "Congener Abbreviation" in Column G is the abbreviation used by this Calculator. These fields may not be identical, but should refer to the same congeners (see the "Congener Abbreviations" worksheets for examples of dioxin and PCB congener naming schemes).

Note that all samples to be imported into the calculator must have the same number of congeners and that only one result should be entered for each congener/sample. Otherwise, an error message will be displayed, and the data transfer routine will be terminated. If multiple results for the same congener are present in the data set, the user should choose the appropriate result and remove the other result(s). An example is for TCDF, which may be confirmed using a second column analysis when it is detected in the initial analysis. In this case, the confirmation sample result should be retained, and the initial result should be discarded. If possible, selection of the correct results should be performed in the database prior to copying the data into this worksheet.

The user should be aware that soil and water samples are often reported within the same laboratory-provided spreadsheet or database output. Since soil and water results have different reporting units, it is best to use different Calculator files for different matrices so that water results will not be confused with soil results (or results from any other matrix). Be sure to enter the matrix and reporting units information at the top of the "Data Entry & Output" worksheet.

After the "Transfer Data" button is pressed, data importation will begin. This importation process may take as long as approximately one minute, depending on the processing speed of the user's computer.

Sample ID (required)	Sample Order (optional)	Congener Name (optional)	CAS Number (required)	Result (required)	Qualifier (required)	Congener Abbreviation (auto-entered)	Congener Order (auto-entered)
SFRA-100	SFRA-100	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	13800		TCDD	1
SFRA-100	SFRA-100	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	11.4	U	PeCDD	2
SFRA-100	SFRA-100	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	19.9	U	1,4-HxCDD	3
SFRA-100	SFRA-100	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	66.1	J	1,6-HxCDD	4
SFRA-100	SFRA-100	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	30.5	J	1,9-HxCDD	5
SFRA-100	SFRA-100	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	702		1,4,6-HpCDD	6
SFRA-100	SFRA-100	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11200		OCDD	7
SFRA-100	SFRA-100	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	73.8	J	TCDF	8
SFRA-100	SFRA-100	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.33	U	1-PeCDF	9
SFRA-100	SFRA-100	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	12.8	U	4-PeCDF	10
SFRA-100	SFRA-100	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	18.8	J	1,4-HxCDF	11
SFRA-100	SFRA-100	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	11	J	1,6-HxCDF	12
SFRA-100	SFRA-100	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	15.1	J	1,9-HxCDF	13
SFRA-100	SFRA-100	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	17.7	U	4,6-HxCDF	14
SFRA-100	SFRA-100	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	250	J	1,4,6-HpCDF	15
SFRA-100	SFRA-100	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	25.6	J	1,4,9-HpCDF	16
SFRA-100	SFRA-100	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	324	J	OCDF	17
SFRA-101	SFRA-101	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3030		TCDD	1
SFRA-101	SFRA-101	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.09	J	PeCDD	2
SFRA-101	SFRA-101	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	6.3	J	1,4-HxCDD	3
SFRA-101	SFRA-101	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	33.2	J	1,6-HxCDD	4

SFRA-101	SFRA-101	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	11.4	J	1,9-HxCDD	5
SFRA-101	SFRA-101	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	421		1,4,6-HpCDD	6
SFRA-101	SFRA-101	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	8830		OCDD	7
SFRA-101	SFRA-101	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	19.4		TCDF	8
SFRA-101	SFRA-101	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.65	J	1-PeCDF	9
SFRA-101	SFRA-101	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.16	J	4-PeCDF	10
SFRA-101	SFRA-101	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.63	J	1,4-HxCDF	11
SFRA-101	SFRA-101	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.46	J	1,6-HxCDF	12
SFRA-101	SFRA-101	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	2.32	U	1,9-HxCDF	13
SFRA-101	SFRA-101	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	6.83	U	4,6-HxCDF	14
SFRA-101	SFRA-101	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	121		1,4,6-HpCDF	15
SFRA-101	SFRA-101	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	7.36	U	1,4,9-HpCDF	16
SFRA-101	SFRA-101	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	175		OCDF	17
SFRA-102	SFRA-102	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3920		TCDD	1
SFRA-102	SFRA-102	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	10.7	J	PeCDD	2
SFRA-102	SFRA-102	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	10.5	J	1,4-HxCDD	3
SFRA-102	SFRA-102	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	24.8	J	1,6-HxCDD	4
SFRA-102	SFRA-102	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	16.9	J	1,9-HxCDD	5
SFRA-102	SFRA-102	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	263		1,4,6-HpCDD	6
SFRA-102	SFRA-102	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	6660		OCDD	7
SFRA-102	SFRA-102	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	22.6	J	TCDF	8
SFRA-102	SFRA-102	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.81	J	1-PeCDF	9
SFRA-102	SFRA-102	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	10.5	J	4-PeCDF	10
SFRA-102	SFRA-102	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	13.3	J	1,4-HxCDF	11
SFRA-102	SFRA-102	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	9.24	J	1,6-HxCDF	12
SFRA-102	SFRA-102	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	15.1	J	1,9-HxCDF	13
SFRA-102	SFRA-102	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	11.5	J	4,6-HxCDF	14
SFRA-102	SFRA-102	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	76.4	J	1,4,6-HpCDF	15
SFRA-102	SFRA-102	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	24.6	U	1,4,9-HpCDF	16
SFRA-102	SFRA-102	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	142	J	OCDF	17
SFRA-103	SFRA-103	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3090		TCDD	1
SFRA-103	SFRA-103	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	3.63	U	PeCDD	2
SFRA-103	SFRA-103	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	5.85	J	1,4-HxCDD	3
SFRA-103	SFRA-103	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	34.2	J	1,6-HxCDD	4
SFRA-103	SFRA-103	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	11.8	J	1,9-HxCDD	5
SFRA-103	SFRA-103	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	332		1,4,6-HpCDD	6
SFRA-103	SFRA-103	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	7750		OCDD	7
SFRA-103	SFRA-103	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	20.8		TCDF	8
SFRA-103	SFRA-103	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.56	J	1-PeCDF	9
SFRA-103	SFRA-103	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.11	J	4-PeCDF	10
SFRA-103	SFRA-103	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	7.54	J	1,4-HxCDF	11
SFRA-103	SFRA-103	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.14	J	1,6-HxCDF	12
SFRA-103	SFRA-103	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.91	U	1,9-HxCDF	13
SFRA-103	SFRA-103	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	8.22	J	4,6-HxCDF	14
SFRA-103	SFRA-103	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	115		1,4,6-HpCDF	15
SFRA-103	SFRA-103	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	5.12	U	1,4,9-HpCDF	16
SFRA-103	SFRA-103	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	109	J	OCDF	17
SFRA-104	SFRA-104	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	610		TCDD	1
SFRA-104	SFRA-104	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	2.16	U	PeCDD	2
SFRA-104	SFRA-104	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	4.39	U	1,4-HxCDD	3
SFRA-104	SFRA-104	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	7.87	J	1,6-HxCDD	4
SFRA-104	SFRA-104	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	4.57	U	1,9-HxCDD	5
SFRA-104	SFRA-104	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	164		1,4,6-HpCDD	6
SFRA-104	SFRA-104	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	6410		OCDD	7
SFRA-104	SFRA-104	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.77	J	TCDF	8

SFRA-104	SFRA-104	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.46	U	1-PeCDF	9
SFRA-104	SFRA-104	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.53	U	4-PeCDF	10
SFRA-104	SFRA-104	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.15	U	1,4-HxCDF	11
SFRA-104	SFRA-104	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.06	J	1,6-HxCDF	12
SFRA-104	SFRA-104	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.39	U	1,9-HxCDF	13
SFRA-104	SFRA-104	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.04	U	4,6-HxCDF	14
SFRA-104	SFRA-104	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	21.3	U	1,4,6-HpCDF	15
SFRA-104	SFRA-104	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	6.05	U	1,4,9-HpCDF	16
SFRA-104	SFRA-104	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	50.6	J	OCDF	17
SFRA-105	SFRA-105	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	179		TCDD	1
SFRA-105	SFRA-105	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.02	U	PeCDD	2
SFRA-105	SFRA-105	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.85	U	1,4-HxCDD	3
SFRA-105	SFRA-105	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	2.43	J	1,6-HxCDD	4
SFRA-105	SFRA-105	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2.07	J	1,9-HxCDD	5
SFRA-105	SFRA-105	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	76.3		1,4,6-HpCDD	6
SFRA-105	SFRA-105	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5550		OCDD	7
SFRA-105	SFRA-105	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.72	J	TCDF	8
SFRA-105	SFRA-105	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.877	U	1-PeCDF	9
SFRA-105	SFRA-105	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.678	U	4-PeCDF	10
SFRA-105	SFRA-105	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.07	U	1,4-HxCDF	11
SFRA-105	SFRA-105	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.06	U	1,6-HxCDF	12
SFRA-105	SFRA-105	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.6	U	1,9-HxCDF	13
SFRA-105	SFRA-105	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	1.16	U	4,6-HxCDF	14
SFRA-105	SFRA-105	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	5.86	J	1,4,6-HpCDF	15
SFRA-105	SFRA-105	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.04	U	1,4,9-HpCDF	16
SFRA-105	SFRA-105	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	8.6	J	OCDF	17
SFRA-106	SFRA-106	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	13900		TCDD	1
SFRA-106	SFRA-106	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	15.9	U	PeCDD	2
SFRA-106	SFRA-106	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	17.1	U	1,4-HxCDD	3
SFRA-106	SFRA-106	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	90	J	1,6-HxCDD	4
SFRA-106	SFRA-106	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	39.2	J	1,9-HxCDD	5
SFRA-106	SFRA-106	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	929		1,4,6-HpCDD	6
SFRA-106	SFRA-106	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13300		OCDD	7
SFRA-106	SFRA-106	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	77.9		TCDF	8
SFRA-106	SFRA-106	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	10	U	1-PeCDF	9
SFRA-106	SFRA-106	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	16.9	J	4-PeCDF	10
SFRA-106	SFRA-106	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	23.8	U	1,4-HxCDF	11
SFRA-106	SFRA-106	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	19.8	J	1,6-HxCDF	12
SFRA-106	SFRA-106	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	15.6	U	1,9-HxCDF	13
SFRA-106	SFRA-106	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	27.3	U	4,6-HxCDF	14
SFRA-106	SFRA-106	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	317		1,4,6-HpCDF	15
SFRA-106	SFRA-106	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	25.1	J	1,4,9-HpCDF	16
SFRA-106	SFRA-106	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	371	J	OCDF	17
SFRA-107	SFRA-107	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1030		TCDD	1
SFRA-107	SFRA-107	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.64	U	PeCDD	2
SFRA-107	SFRA-107	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.33	U	1,4-HxCDD	3
SFRA-107	SFRA-107	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	15.1	J	1,6-HxCDD	4
SFRA-107	SFRA-107	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.48	J	1,9-HxCDD	5
SFRA-107	SFRA-107	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	319		1,4,6-HpCDD	6
SFRA-107	SFRA-107	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	6530		OCDD	7
SFRA-107	SFRA-107	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6	J	TCDF	8
SFRA-107	SFRA-107	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.94	U	1-PeCDF	9
SFRA-107	SFRA-107	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.6	U	4-PeCDF	10
SFRA-107	SFRA-107	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5.83	J	1,4-HxCDF	11
SFRA-107	SFRA-107	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.84	U	1,6-HxCDF	12

SFRA-107	SFRA-107	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.65	U	1,9-HxCDF	13
SFRA-107	SFRA-107	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	3.87	J	4,6-HxCDF	14
SFRA-107	SFRA-107	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	58.4	J	1,4,6-HpCDF	15
SFRA-107	SFRA-107	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.79	U	1,4,9-HpCDF	16
SFRA-107	SFRA-107	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	138		OCDF	17
SFRA-108	SFRA-108	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	956		TCDD	1
SFRA-108	SFRA-108	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.61	U	PeCDD	2
SFRA-108	SFRA-108	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.26	U	1,4-HxCDD	3
SFRA-108	SFRA-108	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	7.4	J	1,6-HxCDD	4
SFRA-108	SFRA-108	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	3.03	J	1,9-HxCDD	5
SFRA-108	SFRA-108	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	149		1,4,6-HpCDD	6
SFRA-108	SFRA-108	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	6320		OCDD	7
SFRA-108	SFRA-108	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.27	J	TCDF	8
SFRA-108	SFRA-108	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.7	U	1-PeCDF	9
SFRA-108	SFRA-108	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.3	J	4-PeCDF	10
SFRA-108	SFRA-108	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.6	J	1,4-HxCDF	11
SFRA-108	SFRA-108	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.14	U	1,6-HxCDF	12
SFRA-108	SFRA-108	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.8	U	1,9-HxCDF	13
SFRA-108	SFRA-108	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	1.53	J	4,6-HxCDF	14
SFRA-108	SFRA-108	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	21.4	J	1,4,6-HpCDF	15
SFRA-108	SFRA-108	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	4.18	U	1,4,9-HpCDF	16
SFRA-108	SFRA-108	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	44.4	J	OCDF	17
SFRA-109	SFRA-109	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	14200		TCDD	1
SFRA-109	SFRA-109	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	8.05	U	PeCDD	2
SFRA-109	SFRA-109	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	14.2	U	1,4-HxCDD	3
SFRA-109	SFRA-109	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	30.1	U	1,6-HxCDD	4
SFRA-109	SFRA-109	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	20.5	U	1,9-HxCDD	5
SFRA-109	SFRA-109	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	612		1,4,6-HpCDD	6
SFRA-109	SFRA-109	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13400		OCDD	7
SFRA-109	SFRA-109	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	82.6		TCDF	8
SFRA-109	SFRA-109	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.79	U	1-PeCDF	9
SFRA-109	SFRA-109	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	10.7	J	4-PeCDF	10
SFRA-109	SFRA-109	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	19.4	J	1,4-HxCDF	11
SFRA-109	SFRA-109	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	10.8	U	1,6-HxCDF	12
SFRA-109	SFRA-109	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	13.7	U	1,9-HxCDF	13
SFRA-109	SFRA-109	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	18.3	J	4,6-HxCDF	14
SFRA-109	SFRA-109	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	188	J	1,4,6-HpCDF	15
SFRA-109	SFRA-109	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	21.2	U	1,4,9-HpCDF	16
SFRA-109	SFRA-109	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	307	J	OCDF	17
SFRA-110	SFRA-110	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2720		TCDD	1
SFRA-110	SFRA-110	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	5.57	J	PeCDD	2
SFRA-110	SFRA-110	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	7.68	J	1,4-HxCDD	3
SFRA-110	SFRA-110	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	129		1,6-HxCDD	4
SFRA-110	SFRA-110	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	27.6	J	1,9-HxCDD	5
SFRA-110	SFRA-110	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1790		1,4,6-HpCDD	6
SFRA-110	SFRA-110	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	18600		OCDD	7
SFRA-110	SFRA-110	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	18		TCDF	8
SFRA-110	SFRA-110	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.8	J	1-PeCDF	9
SFRA-110	SFRA-110	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	21.2	J	4-PeCDF	10
SFRA-110	SFRA-110	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	145		1,4-HxCDF	11
SFRA-110	SFRA-110	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	39.3	J	1,6-HxCDF	12
SFRA-110	SFRA-110	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	52.8		1,9-HxCDF	13
SFRA-110	SFRA-110	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	52.3		4,6-HxCDF	14
SFRA-110	SFRA-110	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	655		1,4,6-HpCDF	15
SFRA-110	SFRA-110	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	144		1,4,9-HpCDF	16

SFRA-110	SFRA-110	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	1190		OCDF	17
SFRA-111	SFRA-111	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1520		TCDD	1
SFRA-111	SFRA-111	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	3.96	J	PeCDD	2
SFRA-111	SFRA-111	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	6.08	J	1,4-HxCDD	3
SFRA-111	SFRA-111	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	46.4	J	1,6-HxCDD	4
SFRA-111	SFRA-111	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	17.3	J	1,9-HxCDD	5
SFRA-111	SFRA-111	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	1120		1,4,6-HpCDD	6
SFRA-111	SFRA-111	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	16600		OCDD	7
SFRA-111	SFRA-111	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	10.9	J	TCDF	8
SFRA-111	SFRA-111	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.67	J	1-PeCDF	9
SFRA-111	SFRA-111	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.92	J	4-PeCDF	10
SFRA-111	SFRA-111	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	19.5	J	1,4-HxCDF	11
SFRA-111	SFRA-111	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.47	J	1,6-HxCDF	12
SFRA-111	SFRA-111	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	6.19	J	1,9-HxCDF	13
SFRA-111	SFRA-111	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	11.9	J	4,6-HxCDF	14
SFRA-111	SFRA-111	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	187		1,4,6-HpCDF	15
SFRA-111	SFRA-111	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	19.5	U	1,4,9-HpCDF	16
SFRA-111	SFRA-111	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	511		OCDF	17
SFRA-112	SFRA-112	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	7690		TCDD	1
SFRA-112	SFRA-112	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	8.76	U	PeCDD	2
SFRA-112	SFRA-112	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	10.1	U	1,4-HxCDD	3
SFRA-112	SFRA-112	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	81.4	U	1,6-HxCDD	4
SFRA-112	SFRA-112	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	25.1	J	1,9-HxCDD	5
SFRA-112	SFRA-112	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	993		1,4,6-HpCDD	6
SFRA-112	SFRA-112	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	13900		OCDD	7
SFRA-112	SFRA-112	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	47		TCDF	8
SFRA-112	SFRA-112	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.52	U	1-PeCDF	9
SFRA-112	SFRA-112	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.88	J	4-PeCDF	10
SFRA-112	SFRA-112	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	21.5	J	1,4-HxCDF	11
SFRA-112	SFRA-112	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	11.4	U	1,6-HxCDF	12
SFRA-112	SFRA-112	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	14.4	U	1,9-HxCDF	13
SFRA-112	SFRA-112	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	19.2	U	4,6-HxCDF	14
SFRA-112	SFRA-112	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	292		1,4,6-HpCDF	15
SFRA-112	SFRA-112	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	23.6	U	1,4,9-HpCDF	16
SFRA-112	SFRA-112	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	451		OCDF	17
SFRA-113	SFRA-113	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	179		TCDD	1
SFRA-113	SFRA-113	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	0.948	U	PeCDD	2
SFRA-113	SFRA-113	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	1.96	U	1,4-HxCDD	3
SFRA-113	SFRA-113	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	2.09	U	1,6-HxCDD	4
SFRA-113	SFRA-113	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	2.16	U	1,9-HxCDD	5
SFRA-113	SFRA-113	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	53.7		1,4,6-HpCDD	6
SFRA-113	SFRA-113	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	3010		OCDD	7
SFRA-113	SFRA-113	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.73	J	TCDF	8
SFRA-113	SFRA-113	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.495	U	1-PeCDF	9
SFRA-113	SFRA-113	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.452	U	4-PeCDF	10
SFRA-113	SFRA-113	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.12	U	1,4-HxCDF	11
SFRA-113	SFRA-113	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.11	U	1,6-HxCDF	12
SFRA-113	SFRA-113	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.8	U	1,9-HxCDF	13
SFRA-113	SFRA-113	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	1.17	U	4,6-HxCDF	14
SFRA-113	SFRA-113	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	6.09	J	1,4,6-HpCDF	15
SFRA-113	SFRA-113	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	2.45	U	1,4,9-HpCDF	16
SFRA-113	SFRA-113	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	15.2	J	OCDF	17
SFRA-114	SFRA-114	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	352		TCDD	1
SFRA-114	SFRA-114	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	1.35	U	PeCDD	2
SFRA-114	SFRA-114	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	2.21	U	1,4-HxCDD	3

SFRA-114	SFRA-114	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	5.66	J	1,6-HxCDD	4
SFRA-114	SFRA-114	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	2.69	U	1,9-HxCDD	5
SFRA-114	SFRA-114	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	116		1,4,6-HpCDD	6
SFRA-114	SFRA-114	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	4130		OCDD	7
SFRA-114	SFRA-114	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.59	J	TCDF	8
SFRA-114	SFRA-114	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.17	U	1-PeCDF	9
SFRA-114	SFRA-114	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.06	U	4-PeCDF	10
SFRA-114	SFRA-114	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.55	U	1,4-HxCDF	11
SFRA-114	SFRA-114	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.41	U	1,6-HxCDF	12
SFRA-114	SFRA-114	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	2.36	U	1,9-HxCDF	13
SFRA-114	SFRA-114	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	1.48	U	4,6-HxCDF	14
SFRA-114	SFRA-114	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	18.7	J	1,4,6-HpCDF	15
SFRA-114	SFRA-114	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	3.93	U	1,4,9-HpCDF	16
SFRA-114	SFRA-114	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	28.6	J	OCDF	17
SFRA-115	SFRA-115	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	413		TCDD	1
SFRA-115	SFRA-115	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	1.57	U	PeCDD	2
SFRA-115	SFRA-115	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	2.77	U	1,4-HxCDD	3
SFRA-115	SFRA-115	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	6.48	J	1,6-HxCDD	4
SFRA-115	SFRA-115	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	3.1	J	1,9-HxCDD	5
SFRA-115	SFRA-115	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	85.7		1,4,6-HpCDD	6
SFRA-115	SFRA-115	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	1520		OCDD	7
SFRA-115	SFRA-115	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	5.3	J	TCDF	8
SFRA-115	SFRA-115	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.22	U	1-PeCDF	9
SFRA-115	SFRA-115	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.14	U	4-PeCDF	10
SFRA-115	SFRA-115	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.01	U	1,4-HxCDF	11
SFRA-115	SFRA-115	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.4	J	1,6-HxCDF	12
SFRA-115	SFRA-115	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.27	U	1,9-HxCDF	13
SFRA-115	SFRA-115	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.08	U	4,6-HxCDF	14
SFRA-115	SFRA-115	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	28.5	J	1,4,6-HpCDF	15
SFRA-115	SFRA-115	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	3.67	U	1,4,9-HpCDF	16
SFRA-115	SFRA-115	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	54.9	J	OCDF	17
SFRA-116	SFRA-116	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	851		TCDD	1
SFRA-116	SFRA-116	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	3	J	PeCDD	2
SFRA-116	SFRA-116	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	3.48	J	1,4-HxCDD	3
SFRA-116	SFRA-116	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	30	J	1,6-HxCDD	4
SFRA-116	SFRA-116	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	9.06	J	1,9-HxCDD	5
SFRA-116	SFRA-116	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	364		1,4,6-HpCDD	6
SFRA-116	SFRA-116	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	9110		OCDD	7
SFRA-116	SFRA-116	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	8.24	J	TCDF	8
SFRA-116	SFRA-116	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.51	J	1-PeCDF	9
SFRA-116	SFRA-116	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.98	J	4-PeCDF	10
SFRA-116	SFRA-116	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	7.27	U	1,4-HxCDF	11
SFRA-116	SFRA-116	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.74	J	1,6-HxCDF	12
SFRA-116	SFRA-116	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.23	U	1,9-HxCDF	13
SFRA-116	SFRA-116	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	6.32	J	4,6-HxCDF	14
SFRA-116	SFRA-116	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	93.8		1,4,6-HpCDF	15
SFRA-116	SFRA-116	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	5.4	J	1,4,9-HpCDF	16
SFRA-116	SFRA-116	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	132		OCDF	17
SFRA-117	SFRA-117	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1160		TCDD	1
SFRA-117	SFRA-117	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	4.81	J	PeCDD	2
SFRA-117	SFRA-117	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	5.99	U	1,4-HxCDD	3
SFRA-117	SFRA-117	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	57.8	J	1,6-HxCDD	4
SFRA-117	SFRA-117	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	16.7	J	1,9-HxCDD	5
SFRA-117	SFRA-117	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	1150		1,4,6-HpCDD	6
SFRA-117	SFRA-117	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	18100		OCDD	7

SFRA-117	SFRA-117	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	10.4	J	TCDF	8
SFRA-117	SFRA-117	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.4	J	1-PeCDF	9
SFRA-117	SFRA-117	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.1	J	4-PeCDF	10
SFRA-117	SFRA-117	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	18.8	J	1,4-HxCDF	11
SFRA-117	SFRA-117	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.95	J	1,6-HxCDF	12
SFRA-117	SFRA-117	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	5.96	J	1,9-HxCDF	13
SFRA-117	SFRA-117	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	12.4	J	4,6-HxCDF	14
SFRA-117	SFRA-117	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	224		1,4,6-HpCDF	15
SFRA-117	SFRA-117	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	18.7	J	1,4,9-HpCDF	16
SFRA-117	SFRA-117	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	474		OCDF	17
SFRA-118	SFRA-118	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1140		TCDD	1
SFRA-118	SFRA-118	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.33	U	PeCDD	2
SFRA-118	SFRA-118	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.14	U	1,4-HxCDD	3
SFRA-118	SFRA-118	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	27.9	J	1,6-HxCDD	4
SFRA-118	SFRA-118	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	8.56	J	1,9-HxCDD	5
SFRA-118	SFRA-118	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	628		1,4,6-HpCDD	6
SFRA-118	SFRA-118	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	15900		OCDD	7
SFRA-118	SFRA-118	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	8.3	J	TCDF	8
SFRA-118	SFRA-118	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.26	J	1-PeCDF	9
SFRA-118	SFRA-118	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.02	J	4-PeCDF	10
SFRA-118	SFRA-118	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	8.51	J	1,4-HxCDF	11
SFRA-118	SFRA-118	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.78	J	1,6-HxCDF	12
SFRA-118	SFRA-118	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.38	U	1,9-HxCDF	13
SFRA-118	SFRA-118	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	5.04	J	4,6-HxCDF	14
SFRA-118	SFRA-118	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	101		1,4,6-HpCDF	15
SFRA-118	SFRA-118	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	6.3	J	1,4,9-HpCDF	16
SFRA-118	SFRA-118	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	255		OCDF	17
SFRA-119	SFRA-119	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	590		TCDD	1
SFRA-119	SFRA-119	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.83	U	PeCDD	2
SFRA-119	SFRA-119	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.76	U	1,4-HxCDD	3
SFRA-119	SFRA-119	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	10.2	J	1,6-HxCDD	4
SFRA-119	SFRA-119	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	3.79	J	1,9-HxCDD	5
SFRA-119	SFRA-119	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	201		1,4,6-HpCDD	6
SFRA-119	SFRA-119	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	6610		OCDD	7
SFRA-119	SFRA-119	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	5.25	J	TCDF	8
SFRA-119	SFRA-119	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.1	U	1-PeCDF	9
SFRA-119	SFRA-119	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.17	U	4-PeCDF	10
SFRA-119	SFRA-119	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.41	J	1,4-HxCDF	11
SFRA-119	SFRA-119	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.26	J	1,6-HxCDF	12
SFRA-119	SFRA-119	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	2.68	U	1,9-HxCDF	13
SFRA-119	SFRA-119	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.05	U	4,6-HxCDF	14
SFRA-119	SFRA-119	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	34.2	J	1,4,6-HpCDF	15
SFRA-119	SFRA-119	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	4.56	J	1,4,9-HpCDF	16
SFRA-119	SFRA-119	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	75.4	J	OCDF	17
SFRA-120	SFRA-120	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	669		TCDD	1
SFRA-120	SFRA-120	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.8	U	PeCDD	2
SFRA-120	SFRA-120	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.34	U	1,4-HxCDD	3
SFRA-120	SFRA-120	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	12.8	J	1,6-HxCDD	4
SFRA-120	SFRA-120	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.2	J	1,9-HxCDD	5
SFRA-120	SFRA-120	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	270		1,4,6-HpCDD	6
SFRA-120	SFRA-120	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5710		OCDD	7
SFRA-120	SFRA-120	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.61	J	TCDF	8
SFRA-120	SFRA-120	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.955	U	1-PeCDF	9
SFRA-120	SFRA-120	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.942	J	4-PeCDF	10
SFRA-120	SFRA-120	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.86	U	1,4-HxCDF	11

SFRA-120	SFRA-120	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.22	U	1,6-HxCDF	12
SFRA-120	SFRA-120	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	2.96	U	1,9-HxCDF	13
SFRA-120	SFRA-120	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.96	J	4,6-HxCDF	14
SFRA-120	SFRA-120	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	47.9		1,4,6-HpCDF	15
SFRA-120	SFRA-120	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	4.58	J	1,4,9-HpCDF	16
SFRA-120	SFRA-120	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	119		OCDF	17
SFRA-121	SFRA-121	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1560		TCDD	1
SFRA-121	SFRA-121	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.78	U	PeCDD	2
SFRA-121	SFRA-121	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.24	U	1,4-HxCDD	3
SFRA-121	SFRA-121	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	35.9	J	1,6-HxCDD	4
SFRA-121	SFRA-121	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	10.5	J	1,9-HxCDD	5
SFRA-121	SFRA-121	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	493		1,4,6-HpCDD	6
SFRA-121	SFRA-121	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	10100		OCDD	7
SFRA-121	SFRA-121	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9.46	J	TCDF	8
SFRA-121	SFRA-121	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.66	U	1-PeCDF	9
SFRA-121	SFRA-121	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.62	U	4-PeCDF	10
SFRA-121	SFRA-121	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	7.68	J	1,4-HxCDF	11
SFRA-121	SFRA-121	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.1	J	1,6-HxCDF	12
SFRA-121	SFRA-121	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.28	U	1,9-HxCDF	13
SFRA-121	SFRA-121	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	6.9	J	4,6-HxCDF	14
SFRA-121	SFRA-121	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	114		1,4,6-HpCDF	15
SFRA-121	SFRA-121	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	8.68	J	1,4,9-HpCDF	16
SFRA-121	SFRA-121	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	204		OCDF	17
SFRA-122	SFRA-122	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	248		TCDD	1
SFRA-122	SFRA-122	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.53	U	PeCDD	2
SFRA-122	SFRA-122	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.98	U	1,4-HxCDD	3
SFRA-122	SFRA-122	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	10.8	J	1,6-HxCDD	4
SFRA-122	SFRA-122	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.4	U	1,9-HxCDD	5
SFRA-122	SFRA-122	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	290		1,4,6-HpCDD	6
SFRA-122	SFRA-122	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	16400		OCDD	7
SFRA-122	SFRA-122	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.3	U	TCDF	8
SFRA-122	SFRA-122	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.9	U	1-PeCDF	9
SFRA-122	SFRA-122	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.64	U	4-PeCDF	10
SFRA-122	SFRA-122	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.77	U	1,4-HxCDF	11
SFRA-122	SFRA-122	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.06	U	1,6-HxCDF	12
SFRA-122	SFRA-122	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.2	U	1,9-HxCDF	13
SFRA-122	SFRA-122	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.24	U	4,6-HxCDF	14
SFRA-122	SFRA-122	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	42.1	J	1,4,6-HpCDF	15
SFRA-122	SFRA-122	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	6.69	U	1,4,9-HpCDF	16
SFRA-122	SFRA-122	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	111	J	OCDF	17
SFRA-123	SFRA-123	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	411		TCDD	1
SFRA-123	SFRA-123	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.35	U	PeCDD	2
SFRA-123	SFRA-123	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.13	U	1,4-HxCDD	3
SFRA-123	SFRA-123	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	6.42	J	1,6-HxCDD	4
SFRA-123	SFRA-123	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.33	U	1,9-HxCDD	5
SFRA-123	SFRA-123	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	155		1,4,6-HpCDD	6
SFRA-123	SFRA-123	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11000		OCDD	7
SFRA-123	SFRA-123	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.44	U	TCDF	8
SFRA-123	SFRA-123	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.61	U	1-PeCDF	9
SFRA-123	SFRA-123	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.43	U	4-PeCDF	10
SFRA-123	SFRA-123	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.35	U	1,4-HxCDF	11
SFRA-123	SFRA-123	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.42	U	1,6-HxCDF	12
SFRA-123	SFRA-123	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.58	U	1,9-HxCDF	13
SFRA-123	SFRA-123	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.51	U	4,6-HxCDF	14
SFRA-123	SFRA-123	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	22.3	J	1,4,6-HpCDF	15

SFRA-123	SFRA-123	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.93	U	1,4,9-HpCDF	16
SFRA-123	SFRA-123	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	66.7	J	OCDF	17
SFRA-124	SFRA-124	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	67.4		TCDD	1
SFRA-124	SFRA-124	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.79	U	PeCDD	2
SFRA-124	SFRA-124	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.22	U	1,4-HxCDD	3
SFRA-124	SFRA-124	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	7.58	J	1,6-HxCDD	4
SFRA-124	SFRA-124	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	3.55	U	1,9-HxCDD	5
SFRA-124	SFRA-124	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	57		1,4,6-HpCDD	6
SFRA-124	SFRA-124	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	1430		OCDD	7
SFRA-124	SFRA-124	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.44	U	TCDF	8
SFRA-124	SFRA-124	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.3	U	1-PeCDF	9
SFRA-124	SFRA-124	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.15	U	4-PeCDF	10
SFRA-124	SFRA-124	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.76	U	1,4-HxCDF	11
SFRA-124	SFRA-124	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.73	U	1,6-HxCDF	12
SFRA-124	SFRA-124	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	2.64	U	1,9-HxCDF	13
SFRA-124	SFRA-124	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	1.87	U	4,6-HxCDF	14
SFRA-124	SFRA-124	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	26.3	J	1,4,6-HpCDF	15
SFRA-124	SFRA-124	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.91	U	1,4,9-HpCDF	16
SFRA-124	SFRA-124	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	30.7	J	OCDF	17
SFRA-125	SFRA-125	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	476		TCDD	1
SFRA-125	SFRA-125	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.43	U	PeCDD	2
SFRA-125	SFRA-125	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	12.5	J	1,4-HxCDD	3
SFRA-125	SFRA-125	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	43.1	J	1,6-HxCDD	4
SFRA-125	SFRA-125	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	15.3	J	1,9-HxCDD	5
SFRA-125	SFRA-125	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	772		1,4,6-HpCDD	6
SFRA-125	SFRA-125	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11100		OCDD	7
SFRA-125	SFRA-125	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	7.33	U	TCDF	8
SFRA-125	SFRA-125	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	8.3	J	1-PeCDF	9
SFRA-125	SFRA-125	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.33	U	4-PeCDF	10
SFRA-125	SFRA-125	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	12.2	J	1,4-HxCDF	11
SFRA-125	SFRA-125	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.38	U	1,6-HxCDF	12
SFRA-125	SFRA-125	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	7.31	U	1,9-HxCDF	13
SFRA-125	SFRA-125	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	6.91	J	4,6-HxCDF	14
SFRA-125	SFRA-125	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	134		1,4,6-HpCDF	15
SFRA-125	SFRA-125	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	10.7	J	1,4,9-HpCDF	16
SFRA-125	SFRA-125	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	385		OCDF	17
SFRA-126	SFRA-126	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	897		TCDD	1
SFRA-126	SFRA-126	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.6	U	PeCDD	2
SFRA-126	SFRA-126	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	12.1	J	1,4-HxCDD	3
SFRA-126	SFRA-126	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	35.7	J	1,6-HxCDD	4
SFRA-126	SFRA-126	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	11.2	J	1,9-HxCDD	5
SFRA-126	SFRA-126	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	870		1,4,6-HpCDD	6
SFRA-126	SFRA-126	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	10900		OCDD	7
SFRA-126	SFRA-126	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	7.91	U	TCDF	8
SFRA-126	SFRA-126	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	16.6	J	1-PeCDF	9
SFRA-126	SFRA-126	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.85	U	4-PeCDF	10
SFRA-126	SFRA-126	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	21.6	J	1,4-HxCDF	11
SFRA-126	SFRA-126	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	8.28	U	1,6-HxCDF	12
SFRA-126	SFRA-126	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	8.65	U	1,9-HxCDF	13
SFRA-126	SFRA-126	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	8.77	J	4,6-HxCDF	14
SFRA-126	SFRA-126	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	284		1,4,6-HpCDF	15
SFRA-126	SFRA-126	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	28.2	J	1,4,9-HpCDF	16
SFRA-126	SFRA-126	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	689		OCDF	17
SFRA-127	SFRA-127	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	158		TCDD	1
SFRA-127	SFRA-127	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.99	U	PeCDD	2

SFRA-127	SFRA-127	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	6.56	U	1,4-HxCDD	3
SFRA-127	SFRA-127	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	11.6	J	1,6-HxCDD	4
SFRA-127	SFRA-127	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	6.97	U	1,9-HxCDD	5
SFRA-127	SFRA-127	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	149		1,4,6-HpCDD	6
SFRA-127	SFRA-127	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	6720		OCDD	7
SFRA-127	SFRA-127	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.32	U	TCDF	8
SFRA-127	SFRA-127	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.7	U	1-PeCDF	9
SFRA-127	SFRA-127	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.39	U	4-PeCDF	10
SFRA-127	SFRA-127	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.91	U	1,4-HxCDF	11
SFRA-127	SFRA-127	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.99	U	1,6-HxCDF	12
SFRA-127	SFRA-127	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	5.99	U	1,9-HxCDF	13
SFRA-127	SFRA-127	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	3.96	U	4,6-HxCDF	14
SFRA-127	SFRA-127	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	46.8	J	1,4,6-HpCDF	15
SFRA-127	SFRA-127	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	16.2	U	1,4,9-HpCDF	16
SFRA-127	SFRA-127	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	82.6	J	OCDF	17
SFRA-129	SFRA-129	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	375		TCDD	1
SFRA-129	SFRA-129	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	2.86	U	PeCDD	2
SFRA-129	SFRA-129	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	7.02	U	1,4-HxCDD	3
SFRA-129	SFRA-129	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	13.9	JQ	1,6-HxCDD	4
SFRA-129	SFRA-129	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	9.12	U	1,9-HxCDD	5
SFRA-129	SFRA-129	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	249		1,4,6-HpCDD	6
SFRA-129	SFRA-129	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	17200		OCDD	7
SFRA-129	SFRA-129	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.62	U	TCDF	8
SFRA-129	SFRA-129	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.89	U	1-PeCDF	9
SFRA-129	SFRA-129	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.55	U	4-PeCDF	10
SFRA-129	SFRA-129	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.97	J	1,4-HxCDF	11
SFRA-129	SFRA-129	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.12	U	1,6-HxCDF	12
SFRA-129	SFRA-129	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.48	U	1,9-HxCDF	13
SFRA-129	SFRA-129	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.59	J	4,6-HxCDF	14
SFRA-129	SFRA-129	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	34.9	J	1,4,6-HpCDF	15
SFRA-129	SFRA-129	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	4.16	U	1,4,9-HpCDF	16
SFRA-129	SFRA-129	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	116	J	OCDF	17
SFRA-130	SFRA-130	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	514		TCDD	1
SFRA-130	SFRA-130	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	2.53	U	PeCDD	2
SFRA-130	SFRA-130	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	4.57	U	1,4-HxCDD	3
SFRA-130	SFRA-130	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	13.3	JQ	1,6-HxCDD	4
SFRA-130	SFRA-130	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	5.77	U	1,9-HxCDD	5
SFRA-130	SFRA-130	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	277		1,4,6-HpCDD	6
SFRA-130	SFRA-130	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	26900		OCDD	7
SFRA-130	SFRA-130	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.1	J	TCDF	8
SFRA-130	SFRA-130	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.6	U	1-PeCDF	9
SFRA-130	SFRA-130	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.65	J	4-PeCDF	10
SFRA-130	SFRA-130	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.42	U	1,4-HxCDF	11
SFRA-130	SFRA-130	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.28	U	1,6-HxCDF	12
SFRA-130	SFRA-130	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.62	U	1,9-HxCDF	13
SFRA-130	SFRA-130	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.62	U	4,6-HxCDF	14
SFRA-130	SFRA-130	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	37.9	J	1,4,6-HpCDF	15
SFRA-130	SFRA-130	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	3.66	U	1,4,9-HpCDF	16
SFRA-130	SFRA-130	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	91.7	J	OCDF	17
SFRA-131	SFRA-131	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	10500		TCDD	1
SFRA-131	SFRA-131	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	14.6	U	PeCDD	2
SFRA-131	SFRA-131	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	32.9	U	1,4-HxCDD	3
SFRA-131	SFRA-131	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	121	U	1,6-HxCDD	4
SFRA-131	SFRA-131	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	47.2	J	1,9-HxCDD	5
SFRA-131	SFRA-131	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	1140		1,4,6-HpCDD	6

SFRA-131	SFRA-131	1,2,3,4,6,7,8,9-Octachlorodibenzo-p	3268-87-9	16400		OCDD	7
SFRA-131	SFRA-131	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	64.8		TCDF	8
SFRA-131	SFRA-131	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	12.9	U	1-PeCDF	9
SFRA-131	SFRA-131	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	10.8	U	4-PeCDF	10
SFRA-131	SFRA-131	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	25.6	U	1,4-HxCDF	11
SFRA-131	SFRA-131	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	17.5	U	1,6-HxCDF	12
SFRA-131	SFRA-131	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	27.8	U	1,9-HxCDF	13
SFRA-131	SFRA-131	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	18.7	U	4,6-HxCDF	14
SFRA-131	SFRA-131	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	366		1,4,6-HpCDF	15
SFRA-131	SFRA-131	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	27.1	U	1,4,9-HpCDF	16
SFRA-131	SFRA-131	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	470	J	OCDF	17
SFRA-132	SFRA-132	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4850		TCDD	1
SFRA-132	SFRA-132	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	6.58	U	PeCDD	2
SFRA-132	SFRA-132	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	10.8	U	1,4-HxCDD	3
SFRA-132	SFRA-132	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	13.2	J	1,6-HxCDD	4
SFRA-132	SFRA-132	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	11.1	U	1,9-HxCDD	5
SFRA-132	SFRA-132	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	434		1,4,6-HpCDD	6
SFRA-132	SFRA-132	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	10800		OCDD	7
SFRA-132	SFRA-132	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	29.7	J	TCDF	8
SFRA-132	SFRA-132	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.93	U	1-PeCDF	9
SFRA-132	SFRA-132	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.65	U	4-PeCDF	10
SFRA-132	SFRA-132	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	10.2	U	1,4-HxCDF	11
SFRA-132	SFRA-132	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.77	U	1,6-HxCDF	12
SFRA-132	SFRA-132	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	11.7	U	1,9-HxCDF	13
SFRA-132	SFRA-132	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	7.36	U	4,6-HxCDF	14
SFRA-132	SFRA-132	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	80.8	J	1,4,6-HpCDF	15
SFRA-132	SFRA-132	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	18.6	U	1,4,9-HpCDF	16
SFRA-132	SFRA-132	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	312	J	OCDF	17
SFRA-133	SFRA-133	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5730		TCDD	1
SFRA-133	SFRA-133	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	7.46	U	PeCDD	2
SFRA-133	SFRA-133	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	13.3	U	1,4-HxCDD	3
SFRA-133	SFRA-133	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	44	J	1,6-HxCDD	4
SFRA-133	SFRA-133	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	13.9	U	1,9-HxCDD	5
SFRA-133	SFRA-133	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	588		1,4,6-HpCDD	6
SFRA-133	SFRA-133	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	11500		OCDD	7
SFRA-133	SFRA-133	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	30.7	J	TCDF	8
SFRA-133	SFRA-133	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	7.64	U	1-PeCDF	9
SFRA-133	SFRA-133	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.48	U	4-PeCDF	10
SFRA-133	SFRA-133	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	11.5	U	1,4-HxCDF	11
SFRA-133	SFRA-133	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	8.27	U	1,6-HxCDF	12
SFRA-133	SFRA-133	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	13.7	U	1,9-HxCDF	13
SFRA-133	SFRA-133	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	10.2	U	4,6-HxCDF	14
SFRA-133	SFRA-133	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	187	J	1,4,6-HpCDF	15
SFRA-133	SFRA-133	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	18.7	U	1,4,9-HpCDF	16
SFRA-133	SFRA-133	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	259	J	OCDF	17
SFRA-134	SFRA-134	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	812		TCDD	1
SFRA-134	SFRA-134	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	6.39	U	PeCDD	2
SFRA-134	SFRA-134	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	16.8	J	1,4-HxCDD	3
SFRA-134	SFRA-134	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	40.8	J	1,6-HxCDD	4
SFRA-134	SFRA-134	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	13.1	J	1,9-HxCDD	5
SFRA-134	SFRA-134	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	1170		1,4,6-HpCDD	6
SFRA-134	SFRA-134	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	14100		OCDD	7
SFRA-134	SFRA-134	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.73	U	TCDF	8
SFRA-134	SFRA-134	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	10.3	J	1-PeCDF	9
SFRA-134	SFRA-134	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.39	J	4-PeCDF	10

SFRA-134	SFRA-134	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	27.9	J	1,4-HxCDF	11
SFRA-134	SFRA-134	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	10.3	J	1,6-HxCDF	12
SFRA-134	SFRA-134	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	11.7	U	1,9-HxCDF	13
SFRA-134	SFRA-134	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	10.5	J	4,6-HxCDF	14
SFRA-134	SFRA-134	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	203		1,4,6-HpCDF	15
SFRA-134	SFRA-134	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	18.8	J	1,4,9-HpCDF	16
SFRA-134	SFRA-134	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	522		OCDF	17
SFRA-135	SFRA-135	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	332		TCDD	1
SFRA-135	SFRA-135	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.33	U	PeCDD	2
SFRA-135	SFRA-135	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	29.7	J	1,4-HxCDD	3
SFRA-135	SFRA-135	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	39.8	J	1,6-HxCDD	4
SFRA-135	SFRA-135	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	11	J	1,9-HxCDD	5
SFRA-135	SFRA-135	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	998		1,4,6-HpCDD	6
SFRA-135	SFRA-135	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12500		OCDD	7
SFRA-135	SFRA-135	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.86	U	TCDF	8
SFRA-135	SFRA-135	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	12	J	1-PeCDF	9
SFRA-135	SFRA-135	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.21	J	4-PeCDF	10
SFRA-135	SFRA-135	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	28.6	J	1,4-HxCDF	11
SFRA-135	SFRA-135	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.43	U	1,6-HxCDF	12
SFRA-135	SFRA-135	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	8.45	U	1,9-HxCDF	13
SFRA-135	SFRA-135	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	12.8	J	4,6-HxCDF	14
SFRA-135	SFRA-135	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	201		1,4,6-HpCDF	15
SFRA-135	SFRA-135	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	18.5	J	1,4,9-HpCDF	16
SFRA-135	SFRA-135	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	539		OCDF	17
SFRA-136	SFRA-136	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	294		TCDD	1
SFRA-136	SFRA-136	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.26	J	PeCDD	2
SFRA-136	SFRA-136	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	11.7	J	1,4-HxCDD	3
SFRA-136	SFRA-136	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	26.2	J	1,6-HxCDD	4
SFRA-136	SFRA-136	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	13.2	J	1,9-HxCDD	5
SFRA-136	SFRA-136	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	697		1,4,6-HpCDD	6
SFRA-136	SFRA-136	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	9870		OCDD	7
SFRA-136	SFRA-136	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.53	U	TCDF	8
SFRA-136	SFRA-136	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	10.9	J	1-PeCDF	9
SFRA-136	SFRA-136	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.12	J	4-PeCDF	10
SFRA-136	SFRA-136	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	21.2	J	1,4-HxCDF	11
SFRA-136	SFRA-136	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.79	J	1,6-HxCDF	12
SFRA-136	SFRA-136	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	6.43	U	1,9-HxCDF	13
SFRA-136	SFRA-136	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	7.62	J	4,6-HxCDF	14
SFRA-136	SFRA-136	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	164		1,4,6-HpCDF	15
SFRA-136	SFRA-136	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	16.5	J	1,4,9-HpCDF	16
SFRA-136	SFRA-136	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	495		OCDF	17
SFRA-137	SFRA-137	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	238		TCDD	1
SFRA-137	SFRA-137	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.27	U	PeCDD	2
SFRA-137	SFRA-137	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	22.7	J	1,4-HxCDD	3
SFRA-137	SFRA-137	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	37.7	J	1,6-HxCDD	4
SFRA-137	SFRA-137	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	13.9	J	1,9-HxCDD	5
SFRA-137	SFRA-137	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1110		1,4,6-HpCDD	6
SFRA-137	SFRA-137	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14300		OCDD	7
SFRA-137	SFRA-137	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	5.49	U	TCDF	8
SFRA-137	SFRA-137	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	11.2	J	1-PeCDF	9
SFRA-137	SFRA-137	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.35	J	4-PeCDF	10
SFRA-137	SFRA-137	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	27.7	J	1,4-HxCDF	11
SFRA-137	SFRA-137	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	8.2	J	1,6-HxCDF	12
SFRA-137	SFRA-137	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	10.1	U	1,9-HxCDF	13
SFRA-137	SFRA-137	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	11.2	J	4,6-HxCDF	14

SFRA-137	SFRA-137	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	224		1,4,6-HpCDF	15
SFRA-137	SFRA-137	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	17.7	J	1,4,9-HpCDF	16
SFRA-137	SFRA-137	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	839		OCDF	17
SFRA-138	SFRA-138	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	731		TCDD	1
SFRA-138	SFRA-138	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.43	U	PeCDD	2
SFRA-138	SFRA-138	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	7.46	J	1,4-HxCDD	3
SFRA-138	SFRA-138	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	10	J	1,6-HxCDD	4
SFRA-138	SFRA-138	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	11.6	U	1,9-HxCDD	5
SFRA-138	SFRA-138	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	429		1,4,6-HpCDD	6
SFRA-138	SFRA-138	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	21600		OCDD	7
SFRA-138	SFRA-138	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.08	J	TCDF	8
SFRA-138	SFRA-138	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.33	J	1-PeCDF	9
SFRA-138	SFRA-138	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.45	J	4-PeCDF	10
SFRA-138	SFRA-138	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.06	U	1,4-HxCDF	11
SFRA-138	SFRA-138	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.99	U	1,6-HxCDF	12
SFRA-138	SFRA-138	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.16	U	1,9-HxCDF	13
SFRA-138	SFRA-138	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.1	U	4,6-HxCDF	14
SFRA-138	SFRA-138	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	7.26	J	1,4,6-HpCDF	15
SFRA-138	SFRA-138	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	5.16	U	1,4,9-HpCDF	16
SFRA-138	SFRA-138	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	21.9	U	OCDF	17
SFRA-139	SFRA-139	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	8340		TCDD	1
SFRA-139	SFRA-139	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	12.2	J	PeCDD	2
SFRA-139	SFRA-139	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	17.4	U	1,4-HxCDD	3
SFRA-139	SFRA-139	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	60.1	J	1,6-HxCDD	4
SFRA-139	SFRA-139	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	34.2	J	1,9-HxCDD	5
SFRA-139	SFRA-139	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1070		1,4,6-HpCDD	6
SFRA-139	SFRA-139	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14100		OCDD	7
SFRA-139	SFRA-139	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	51.3		TCDF	8
SFRA-139	SFRA-139	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	7.92	U	1-PeCDF	9
SFRA-139	SFRA-139	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	9.77	J	4-PeCDF	10
SFRA-139	SFRA-139	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	16.7	J	1,4-HxCDF	11
SFRA-139	SFRA-139	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	41.2	J	1,6-HxCDF	12
SFRA-139	SFRA-139	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	13.9	U	1,9-HxCDF	13
SFRA-139	SFRA-139	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	17.8	J	4,6-HxCDF	14
SFRA-139	SFRA-139	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	231		1,4,6-HpCDF	15
SFRA-139	SFRA-139	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	37	U	1,4,9-HpCDF	16
SFRA-139	SFRA-139	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	323	J	OCDF	17
SFRA-140	SFRA-140	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	8200		TCDD	1
SFRA-140	SFRA-140	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	11.1	U	PeCDD	2
SFRA-140	SFRA-140	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	16.5	U	1,4-HxCDD	3
SFRA-140	SFRA-140	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	90.7	J	1,6-HxCDD	4
SFRA-140	SFRA-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	46.5	J	1,9-HxCDD	5
SFRA-140	SFRA-140	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	897		1,4,6-HpCDD	6
SFRA-140	SFRA-140	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11700		OCDD	7
SFRA-140	SFRA-140	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	42.8		TCDF	8
SFRA-140	SFRA-140	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	8.34	U	1-PeCDF	9
SFRA-140	SFRA-140	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	10.8	J	4-PeCDF	10
SFRA-140	SFRA-140	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	19.7	J	1,4-HxCDF	11
SFRA-140	SFRA-140	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	65.1	J	1,6-HxCDF	12
SFRA-140	SFRA-140	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	15.9	U	1,9-HxCDF	13
SFRA-140	SFRA-140	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	15.7	J	4,6-HxCDF	14
SFRA-140	SFRA-140	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	324		1,4,6-HpCDF	15
SFRA-140	SFRA-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	19.8	U	1,4,9-HpCDF	16
SFRA-140	SFRA-140	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	350	J	OCDF	17
SFRA-141	SFRA-141	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3450		TCDD	1

SFRA-141	SFRA-141	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	7.68	U	PeCDD	2
SFRA-141	SFRA-141	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	10.7	U	1,4-HxCDD	3
SFRA-141	SFRA-141	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	35.4	J	1,6-HxCDD	4
SFRA-141	SFRA-141	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	14	J	1,9-HxCDD	5
SFRA-141	SFRA-141	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	526		1,4,6-HpCDD	6
SFRA-141	SFRA-141	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8530		OCDD	7
SFRA-141	SFRA-141	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	22.9	J	TCDF	8
SFRA-141	SFRA-141	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.46	U	1-PeCDF	9
SFRA-141	SFRA-141	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.93	U	4-PeCDF	10
SFRA-141	SFRA-141	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	7.63	U	1,4-HxCDF	11
SFRA-141	SFRA-141	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	17.7	J	1,6-HxCDF	12
SFRA-141	SFRA-141	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	10.3	U	1,9-HxCDF	13
SFRA-141	SFRA-141	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	7.48	U	4,6-HxCDF	14
SFRA-141	SFRA-141	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	159	J	1,4,6-HpCDF	15
SFRA-141	SFRA-141	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	11.7	U	1,4,9-HpCDF	16
SFRA-141	SFRA-141	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	214	J	OCDF	17
SFRA-142	SFRA-142	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4070		TCDD	1
SFRA-142	SFRA-142	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	11.9	U	PeCDD	2
SFRA-142	SFRA-142	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	26.4	U	1,4-HxCDD	3
SFRA-142	SFRA-142	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	50.7	J	1,6-HxCDD	4
SFRA-142	SFRA-142	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	27.8	U	1,9-HxCDD	5
SFRA-142	SFRA-142	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	759		1,4,6-HpCDD	6
SFRA-142	SFRA-142	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11400		OCDD	7
SFRA-142	SFRA-142	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	27.4	J	TCDF	8
SFRA-142	SFRA-142	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	9.83	U	1-PeCDF	9
SFRA-142	SFRA-142	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	9.45	U	4-PeCDF	10
SFRA-142	SFRA-142	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	20.5	J	1,4-HxCDF	11
SFRA-142	SFRA-142	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	32.9	J	1,6-HxCDF	12
SFRA-142	SFRA-142	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	13.6	U	1,9-HxCDF	13
SFRA-142	SFRA-142	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	15.3	J	4,6-HxCDF	14
SFRA-142	SFRA-142	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	181	J	1,4,6-HpCDF	15
SFRA-142	SFRA-142	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	20.4	U	1,4,9-HpCDF	16
SFRA-142	SFRA-142	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	259	J	OCDF	17
SFRA-143	SFRA-143	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	14900		TCDD	1
SFRA-143	SFRA-143	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	20.5	U	PeCDD	2
SFRA-143	SFRA-143	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	35.5	U	1,4-HxCDD	3
SFRA-143	SFRA-143	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	105	J	1,6-HxCDD	4
SFRA-143	SFRA-143	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	42.5	J	1,9-HxCDD	5
SFRA-143	SFRA-143	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1370		1,4,6-HpCDD	6
SFRA-143	SFRA-143	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14800		OCDD	7
SFRA-143	SFRA-143	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	90.1	J	TCDF	8
SFRA-143	SFRA-143	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	18.6	U	1-PeCDF	9
SFRA-143	SFRA-143	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	16.2	U	4-PeCDF	10
SFRA-143	SFRA-143	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	29.4	J	1,4-HxCDF	11
SFRA-143	SFRA-143	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	58.5	J	1,6-HxCDF	12
SFRA-143	SFRA-143	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	37.9	U	1,9-HxCDF	13
SFRA-143	SFRA-143	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	23.4	U	4,6-HxCDF	14
SFRA-143	SFRA-143	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	671		1,4,6-HpCDF	15
SFRA-143	SFRA-143	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	46.9	U	1,4,9-HpCDF	16
SFRA-143	SFRA-143	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	966		OCDF	17
SFRA-144	SFRA-144	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3100		TCDD	1
SFRA-144	SFRA-144	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	9.55	U	PeCDD	2
SFRA-144	SFRA-144	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	14.2	U	1,4-HxCDD	3
SFRA-144	SFRA-144	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	44.3	J	1,6-HxCDD	4
SFRA-144	SFRA-144	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	15.3	U	1,9-HxCDD	5

SFRA-144	SFRA-144	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	448		1,4,6-HpCDD	6
SFRA-144	SFRA-144	1,2,3,4,6,7,8,9-Octachlorodibenzo-p	3268-87-9	10000		OCDD	7
SFRA-144	SFRA-144	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	21.5	J	TCDF	8
SFRA-144	SFRA-144	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	9.54	U	1-PeCDF	9
SFRA-144	SFRA-144	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	8.09	U	4-PeCDF	10
SFRA-144	SFRA-144	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	9.74	U	1,4-HxCDF	11
SFRA-144	SFRA-144	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	8.98	U	1,6-HxCDF	12
SFRA-144	SFRA-144	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	14.2	U	1,9-HxCDF	13
SFRA-144	SFRA-144	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	10.3	U	4,6-HxCDF	14
SFRA-144	SFRA-144	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	117	J	1,4,6-HpCDF	15
SFRA-144	SFRA-144	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	14.6	U	1,4,9-HpCDF	16
SFRA-144	SFRA-144	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	122	J	OCDF	17
SFRA-145	SFRA-145	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5690		TCDD	1
SFRA-145	SFRA-145	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	13	U	PeCDD	2
SFRA-145	SFRA-145	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	21.4	U	1,4-HxCDD	3
SFRA-145	SFRA-145	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	46.1	J	1,6-HxCDD	4
SFRA-145	SFRA-145	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	22.6	U	1,9-HxCDD	5
SFRA-145	SFRA-145	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	814		1,4,6-HpCDD	6
SFRA-145	SFRA-145	1,2,3,4,6,7,8,9-Octachlorodibenzo-p	3268-87-9	13600		OCDD	7
SFRA-145	SFRA-145	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	34	J	TCDF	8
SFRA-145	SFRA-145	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	13	U	1-PeCDF	9
SFRA-145	SFRA-145	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	12.4	U	4-PeCDF	10
SFRA-145	SFRA-145	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	18.5	U	1,4-HxCDF	11
SFRA-145	SFRA-145	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	17	U	1,6-HxCDF	12
SFRA-145	SFRA-145	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	32	U	1,9-HxCDF	13
SFRA-145	SFRA-145	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	19.7	U	4,6-HxCDF	14
SFRA-145	SFRA-145	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	203	J	1,4,6-HpCDF	15
SFRA-145	SFRA-145	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	79.6	U	1,4,9-HpCDF	16
SFRA-145	SFRA-145	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	302	J	OCDF	17
SFRA-146	SFRA-146	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3570		TCDD	1
SFRA-146	SFRA-146	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	13.6	U	PeCDD	2
SFRA-146	SFRA-146	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	33.2	U	1,4-HxCDD	3
SFRA-146	SFRA-146	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	40.1	J	1,6-HxCDD	4
SFRA-146	SFRA-146	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	33.8	U	1,9-HxCDD	5
SFRA-146	SFRA-146	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	643		1,4,6-HpCDD	6
SFRA-146	SFRA-146	1,2,3,4,6,7,8,9-Octachlorodibenzo-p	3268-87-9	10800		OCDD	7
SFRA-146	SFRA-146	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	26.6	J	TCDF	8
SFRA-146	SFRA-146	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	15.9	U	1-PeCDF	9
SFRA-146	SFRA-146	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	9.65	U	4-PeCDF	10
SFRA-146	SFRA-146	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	13.3	U	1,4-HxCDF	11
SFRA-146	SFRA-146	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	10	U	1,6-HxCDF	12
SFRA-146	SFRA-146	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	16.2	U	1,9-HxCDF	13
SFRA-146	SFRA-146	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	10.9	U	4,6-HxCDF	14
SFRA-146	SFRA-146	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	146	J	1,4,6-HpCDF	15
SFRA-146	SFRA-146	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	30.8	U	1,4,9-HpCDF	16
SFRA-146	SFRA-146	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	307	J	OCDF	17
SFRA-147	SFRA-147	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	335		TCDD	1
SFRA-147	SFRA-147	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	2.14	U	PeCDD	2
SFRA-147	SFRA-147	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	4.47	U	1,4-HxCDD	3
SFRA-147	SFRA-147	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	7.03	U	1,6-HxCDD	4
SFRA-147	SFRA-147	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	4.53	U	1,9-HxCDD	5
SFRA-147	SFRA-147	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	106		1,4,6-HpCDD	6
SFRA-147	SFRA-147	1,2,3,4,6,7,8,9-Octachlorodibenzo-p	3268-87-9	4940		OCDD	7
SFRA-147	SFRA-147	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.93	J	TCDF	8
SFRA-147	SFRA-147	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.24	U	1-PeCDF	9

SFRA-147	SFRA-147	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.81	U	4-PeCDF	10
SFRA-147	SFRA-147	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.32	U	1,4-HxCDF	11
SFRA-147	SFRA-147	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.19	U	1,6-HxCDF	12
SFRA-147	SFRA-147	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.71	U	1,9-HxCDF	13
SFRA-147	SFRA-147	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.37	U	4,6-HxCDF	14
SFRA-147	SFRA-147	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	21.5	J	1,4,6-HpCDF	15
SFRA-147	SFRA-147	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	6.79	U	1,4,9-HpCDF	16
SFRA-147	SFRA-147	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	32.6	J	OCDF	17
SFRA-148	SFRA-148	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	24400		TCDD	1
SFRA-148	SFRA-148	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	32.5	U	PeCDD	2
SFRA-148	SFRA-148	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	62.6	U	1,4-HxCDD	3
SFRA-148	SFRA-148	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	139	J	1,6-HxCDD	4
SFRA-148	SFRA-148	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	62.1	U	1,9-HxCDD	5
SFRA-148	SFRA-148	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1420		1,4,6-HpCDD	6
SFRA-148	SFRA-148	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	16000		OCDD	7
SFRA-148	SFRA-148	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	163		TCDF	8
SFRA-148	SFRA-148	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	22.5	U	1-PeCDF	9
SFRA-148	SFRA-148	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	20.8	U	4-PeCDF	10
SFRA-148	SFRA-148	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	39.3	J	1,4-HxCDF	11
SFRA-148	SFRA-148	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	25.1	U	1,6-HxCDF	12
SFRA-148	SFRA-148	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	34.1	U	1,9-HxCDF	13
SFRA-148	SFRA-148	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	33.2	J	4,6-HxCDF	14
SFRA-148	SFRA-148	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	491	J	1,4,6-HpCDF	15
SFRA-148	SFRA-148	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	91.5	U	1,4,9-HpCDF	16
SFRA-148	SFRA-148	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	521	J	OCDF	17
SFRA-149	SFRA-149	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	11300		TCDD	1
SFRA-149	SFRA-149	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	14.8	U	PeCDD	2
SFRA-149	SFRA-149	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	24	U	1,4-HxCDD	3
SFRA-149	SFRA-149	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	25.1	J	1,6-HxCDD	4
SFRA-149	SFRA-149	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	24.2	U	1,9-HxCDD	5
SFRA-149	SFRA-149	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	562		1,4,6-HpCDD	6
SFRA-149	SFRA-149	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8990		OCDD	7
SFRA-149	SFRA-149	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	73.6	J	TCDF	8
SFRA-149	SFRA-149	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	13.2	U	1-PeCDF	9
SFRA-149	SFRA-149	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	11.7	U	4-PeCDF	10
SFRA-149	SFRA-149	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	16.5	U	1,4-HxCDF	11
SFRA-149	SFRA-149	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	14	U	1,6-HxCDF	12
SFRA-149	SFRA-149	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	25.4	U	1,9-HxCDF	13
SFRA-149	SFRA-149	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	17.9	U	4,6-HxCDF	14
SFRA-149	SFRA-149	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	160	J	1,4,6-HpCDF	15
SFRA-149	SFRA-149	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	44.4	U	1,4,9-HpCDF	16
SFRA-149	SFRA-149	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	194	J	OCDF	17
SFRA-150	SFRA-150	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1770		TCDD	1
SFRA-150	SFRA-150	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.72	J	PeCDD	2
SFRA-150	SFRA-150	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.4	U	1,4-HxCDD	3
SFRA-150	SFRA-150	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	21.2	J	1,6-HxCDD	4
SFRA-150	SFRA-150	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	7.93	J	1,9-HxCDD	5
SFRA-150	SFRA-150	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	411		1,4,6-HpCDD	6
SFRA-150	SFRA-150	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7850		OCDD	7
SFRA-150	SFRA-150	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	15.8		TCDF	8
SFRA-150	SFRA-150	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.83	J	1-PeCDF	9
SFRA-150	SFRA-150	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.32	J	4-PeCDF	10
SFRA-150	SFRA-150	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	9.11	J	1,4-HxCDF	11
SFRA-150	SFRA-150	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.06	J	1,6-HxCDF	12
SFRA-150	SFRA-150	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	3.29	U	1,9-HxCDF	13

SFRA-150	SFRA-150	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	4.74	J	4,6-HxCDF	14
SFRA-150	SFRA-150	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	86.9		1,4,6-HpCDF	15
SFRA-150	SFRA-150	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	6.44	J	1,4,9-HpCDF	16
SFRA-150	SFRA-150	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	164		OCDF	17
SFRA-151	SFRA-151	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	15.8		TCDD	1
SFRA-151	SFRA-151	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.12	U	PeCDD	2
SFRA-151	SFRA-151	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.77	U	1,4-HxCDD	3
SFRA-151	SFRA-151	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.6	U	1,6-HxCDD	4
SFRA-151	SFRA-151	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.75	U	1,9-HxCDD	5
SFRA-151	SFRA-151	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	32.8	J	1,4,6-HpCDD	6
SFRA-151	SFRA-151	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	2290		OCDD	7
SFRA-151	SFRA-151	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.28	U	TCDF	8
SFRA-151	SFRA-151	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.745	U	1-PeCDF	9
SFRA-151	SFRA-151	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.645	U	4-PeCDF	10
SFRA-151	SFRA-151	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.953	U	1,4-HxCDF	11
SFRA-151	SFRA-151	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.863	U	1,6-HxCDF	12
SFRA-151	SFRA-151	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.48	U	1,9-HxCDF	13
SFRA-151	SFRA-151	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	0.963	U	4,6-HxCDF	14
SFRA-151	SFRA-151	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	4.73	J	1,4,6-HpCDF	15
SFRA-151	SFRA-151	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.43	U	1,4,9-HpCDF	16
SFRA-151	SFRA-151	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	8.65	J	OCDF	17
SFRA-152	SFRA-152	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.6	U	TCDD	1
SFRA-152	SFRA-152	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	0.99	U	PeCDD	2
SFRA-152	SFRA-152	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.55	U	1,4-HxCDD	3
SFRA-152	SFRA-152	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.46	U	1,6-HxCDD	4
SFRA-152	SFRA-152	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.58	U	1,9-HxCDD	5
SFRA-152	SFRA-152	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	9.72	J	1,4,6-HpCDD	6
SFRA-152	SFRA-152	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	329		OCDD	7
SFRA-152	SFRA-152	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.15	U	TCDF	8
SFRA-152	SFRA-152	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.632	U	1-PeCDF	9
SFRA-152	SFRA-152	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.597	U	4-PeCDF	10
SFRA-152	SFRA-152	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.922	U	1,4-HxCDF	11
SFRA-152	SFRA-152	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.875	U	1,6-HxCDF	12
SFRA-152	SFRA-152	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.58	U	1,9-HxCDF	13
SFRA-152	SFRA-152	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	0.971	U	4,6-HxCDF	14
SFRA-152	SFRA-152	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.6	J	1,4,6-HpCDF	15
SFRA-152	SFRA-152	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.52	U	1,4,9-HpCDF	16
SFRA-152	SFRA-152	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	6.52	U	OCDF	17
SFRA-153	SFRA-153	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.62	U	TCDD	1
SFRA-153	SFRA-153	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.15	U	PeCDD	2
SFRA-153	SFRA-153	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.49	U	1,4-HxCDD	3
SFRA-153	SFRA-153	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.43	U	1,6-HxCDD	4
SFRA-153	SFRA-153	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.54	U	1,9-HxCDD	5
SFRA-153	SFRA-153	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	6.58	J	1,4,6-HpCDD	6
SFRA-153	SFRA-153	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	414		OCDD	7
SFRA-153	SFRA-153	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.23	U	TCDF	8
SFRA-153	SFRA-153	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.569	J	1-PeCDF	9
SFRA-153	SFRA-153	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.482	U	4-PeCDF	10
SFRA-153	SFRA-153	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.874	U	1,4-HxCDF	11
SFRA-153	SFRA-153	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.783	U	1,6-HxCDF	12
SFRA-153	SFRA-153	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.38	U	1,9-HxCDF	13
SFRA-153	SFRA-153	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	0.927	U	4,6-HxCDF	14
SFRA-153	SFRA-153	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.2	U	1,4,6-HpCDF	15
SFRA-153	SFRA-153	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.96	U	1,4,9-HpCDF	16
SFRA-153	SFRA-153	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	5.42	U	OCDF	17

SFRA-154	SFRA-154	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.11	U	TCDD	1
SFRA-154	SFRA-154	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	0.769	U	PeCDD	2
SFRA-154	SFRA-154	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.33	U	1,4-HxCDD	3
SFRA-154	SFRA-154	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.24	U	1,6-HxCDD	4
SFRA-154	SFRA-154	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.35	U	1,9-HxCDD	5
SFRA-154	SFRA-154	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	21.3	J	1,4,6-HpCDD	6
SFRA-154	SFRA-154	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	755		OCDD	7
SFRA-154	SFRA-154	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.05	U	TCDF	8
SFRA-154	SFRA-154	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.533	U	1-PeCDF	9
SFRA-154	SFRA-154	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.483	U	4-PeCDF	10
SFRA-154	SFRA-154	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.629	U	1,4-HxCDF	11
SFRA-154	SFRA-154	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.607	U	1,6-HxCDF	12
SFRA-154	SFRA-154	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.04	U	1,9-HxCDF	13
SFRA-154	SFRA-154	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	0.636	U	4,6-HxCDF	14
SFRA-154	SFRA-154	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.88	J	1,4,6-HpCDF	15
SFRA-154	SFRA-154	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.67	U	1,4,9-HpCDF	16
SFRA-154	SFRA-154	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	4.04	U	OCDF	17
SFRA-155	SFRA-155	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	0.75	U	TCDD	1
SFRA-155	SFRA-155	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	0.857	U	PeCDD	2
SFRA-155	SFRA-155	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.37	U	1,4-HxCDD	3
SFRA-155	SFRA-155	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.29	U	1,6-HxCDD	4
SFRA-155	SFRA-155	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.41	U	1,9-HxCDD	5
SFRA-155	SFRA-155	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	7.01	J	1,4,6-HpCDD	6
SFRA-155	SFRA-155	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	161		OCDD	7
SFRA-155	SFRA-155	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.62	J	TCDF	8
SFRA-155	SFRA-155	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.843	J	1-PeCDF	9
SFRA-155	SFRA-155	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.726	U	4-PeCDF	10
SFRA-155	SFRA-155	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.837	U	1,4-HxCDF	11
SFRA-155	SFRA-155	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.801	U	1,6-HxCDF	12
SFRA-155	SFRA-155	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.3	U	1,9-HxCDF	13
SFRA-155	SFRA-155	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	0.879	U	4,6-HxCDF	14
SFRA-155	SFRA-155	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	2.42	J	1,4,6-HpCDF	15
SFRA-155	SFRA-155	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.86	U	1,4,9-HpCDF	16
SFRA-155	SFRA-155	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	4.47	J	OCDF	17
SFRA-156	SFRA-156	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	79.3		TCDD	1
SFRA-156	SFRA-156	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.04	U	PeCDD	2
SFRA-156	SFRA-156	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.86	J	1,4-HxCDD	3
SFRA-156	SFRA-156	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	41.6	J	1,6-HxCDD	4
SFRA-156	SFRA-156	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	14.4	U	1,9-HxCDD	5
SFRA-156	SFRA-156	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	879		1,4,6-HpCDD	6
SFRA-156	SFRA-156	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	10700		OCDD	7
SFRA-156	SFRA-156	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.86	J	TCDF	8
SFRA-156	SFRA-156	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.52	U	1-PeCDF	9
SFRA-156	SFRA-156	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.42	J	4-PeCDF	10
SFRA-156	SFRA-156	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	10.2	J	1,4-HxCDF	11
SFRA-156	SFRA-156	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.46	J	1,6-HxCDF	12
SFRA-156	SFRA-156	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	6.94	U	1,9-HxCDF	13
SFRA-156	SFRA-156	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	8.3	J	4,6-HxCDF	14
SFRA-156	SFRA-156	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	143		1,4,6-HpCDF	15
SFRA-156	SFRA-156	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	13.1	J	1,4,9-HpCDF	16
SFRA-156	SFRA-156	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	405		OCDF	17
SFRA-157	SFRA-157	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	7140		TCDD	1
SFRA-157	SFRA-157	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	12.1	U	PeCDD	2
SFRA-157	SFRA-157	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	17.6	U	1,4-HxCDD	3
SFRA-157	SFRA-157	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	79.1	J	1,6-HxCDD	4

SFRA-157	SFRA-157	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	18.8	U	1,9-HxCDD	5
SFRA-157	SFRA-157	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	877		1,4,6-HpCDD	6
SFRA-157	SFRA-157	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	11500		OCDD	7
SFRA-157	SFRA-157	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	44.4	J	TCDF	8
SFRA-157	SFRA-157	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	7.64	U	1-PeCDF	9
SFRA-157	SFRA-157	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.84	U	4-PeCDF	10
SFRA-157	SFRA-157	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	17	J	1,4-HxCDF	11
SFRA-157	SFRA-157	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	11.6	U	1,6-HxCDF	12
SFRA-157	SFRA-157	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	18.1	U	1,9-HxCDF	13
SFRA-157	SFRA-157	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	12.4	U	4,6-HxCDF	14
SFRA-157	SFRA-157	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	253	J	1,4,6-HpCDF	15
SFRA-157	SFRA-157	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	25.9	U	1,4,9-HpCDF	16
SFRA-157	SFRA-157	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	351	J	OCDF	17
SFRA-158	SFRA-158	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3370		TCDD	1
SFRA-158	SFRA-158	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	6.83	U	PeCDD	2
SFRA-158	SFRA-158	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	12.7	U	1,4-HxCDD	3
SFRA-158	SFRA-158	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	20.7	J	1,6-HxCDD	4
SFRA-158	SFRA-158	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	12.8	U	1,9-HxCDD	5
SFRA-158	SFRA-158	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	419		1,4,6-HpCDD	6
SFRA-158	SFRA-158	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	7500		OCDD	7
SFRA-158	SFRA-158	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	21	J	TCDF	8
SFRA-158	SFRA-158	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.45	U	1-PeCDF	9
SFRA-158	SFRA-158	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.21	U	4-PeCDF	10
SFRA-158	SFRA-158	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	9.7	U	1,4-HxCDF	11
SFRA-158	SFRA-158	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.29	U	1,6-HxCDF	12
SFRA-158	SFRA-158	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	13.8	U	1,9-HxCDF	13
SFRA-158	SFRA-158	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	8.22	U	4,6-HxCDF	14
SFRA-158	SFRA-158	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	87.6	J	1,4,6-HpCDF	15
SFRA-158	SFRA-158	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	20.4	U	1,4,9-HpCDF	16
SFRA-158	SFRA-158	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	177	J	OCDF	17
SFRA-159	SFRA-159	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	276		TCDD	1
SFRA-159	SFRA-159	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	2.63	U	PeCDD	2
SFRA-159	SFRA-159	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	4.51	U	1,4-HxCDD	3
SFRA-159	SFRA-159	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	18.6	J	1,6-HxCDD	4
SFRA-159	SFRA-159	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	6.82	J	1,9-HxCDD	5
SFRA-159	SFRA-159	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	424		1,4,6-HpCDD	6
SFRA-159	SFRA-159	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	8140		OCDD	7
SFRA-159	SFRA-159	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	5.84	J	TCDF	8
SFRA-159	SFRA-159	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.96	U	1-PeCDF	9
SFRA-159	SFRA-159	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.69	U	4-PeCDF	10
SFRA-159	SFRA-159	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.74	J	1,4-HxCDF	11
SFRA-159	SFRA-159	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.74	J	1,6-HxCDF	12
SFRA-159	SFRA-159	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	6.15	U	1,9-HxCDF	13
SFRA-159	SFRA-159	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	5.37	J	4,6-HxCDF	14
SFRA-159	SFRA-159	1,2,3,4,6,7,8-Heptachlorodibenzofura	67562-39-4	83.7		1,4,6-HpCDF	15
SFRA-159	SFRA-159	1,2,3,4,7,8,9-Heptachlorodibenzofura	55673-89-7	7.86	J	1,4,9-HpCDF	16
SFRA-159	SFRA-159	1,2,3,4,6,7,8,9-Octachlorodibenzofur	39001-02-0	208		OCDF	17
SFRA-160	SFRA-160	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2360		TCDD	1
SFRA-160	SFRA-160	1,2,3,7,8-Pentachlorodibenzo-p-diox	40321-76-4	3.03	U	PeCDD	2
SFRA-160	SFRA-160	1,2,3,4,7,8-Hexachlorodibenzo-p-dio	39227-28-6	7.4	U	1,4-HxCDD	3
SFRA-160	SFRA-160	1,2,3,6,7,8-Hexachlorodibenzo-p-dio	57653-85-7	14.2	J	1,6-HxCDD	4
SFRA-160	SFRA-160	1,2,3,7,8,9-Hexachlorodibenzo-p-dio	19408-74-3	7.24	U	1,9-HxCDD	5
SFRA-160	SFRA-160	1,2,3,4,6,7,8-Heptachlorodibenzo-p-d	35822-46-9	291		1,4,6-HpCDD	6
SFRA-160	SFRA-160	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-	3268-87-9	8300		OCDD	7
SFRA-160	SFRA-160	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	14.5		TCDF	8

SFRA-160	SFRA-160	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.31	U	1-PeCDF	9
SFRA-160	SFRA-160	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.02	J	4-PeCDF	10
SFRA-160	SFRA-160	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6	J	1,4-HxCDF	11
SFRA-160	SFRA-160	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.06	U	1,6-HxCDF	12
SFRA-160	SFRA-160	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	7.34	U	1,9-HxCDF	13
SFRA-160	SFRA-160	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	4.49	U	4,6-HxCDF	14
SFRA-160	SFRA-160	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	59.6		1,4,6-HpCDF	15
SFRA-160	SFRA-160	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	15.3	U	1,4,9-HpCDF	16
SFRA-160	SFRA-160	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	76.3	J	OCDF	17
SFRA-161	SFRA-161	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	340		TCDD	1
SFRA-161	SFRA-161	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.05	U	PeCDD	2
SFRA-161	SFRA-161	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.67	U	1,4-HxCDD	3
SFRA-161	SFRA-161	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	9.51	J	1,6-HxCDD	4
SFRA-161	SFRA-161	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.79	U	1,9-HxCDD	5
SFRA-161	SFRA-161	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	267		1,4,6-HpCDD	6
SFRA-161	SFRA-161	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5920		OCDD	7
SFRA-161	SFRA-161	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.2	J	TCDF	8
SFRA-161	SFRA-161	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.13	U	1-PeCDF	9
SFRA-161	SFRA-161	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.93	U	4-PeCDF	10
SFRA-161	SFRA-161	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.79	J	1,4-HxCDF	11
SFRA-161	SFRA-161	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.36	U	1,6-HxCDF	12
SFRA-161	SFRA-161	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	4.32	U	1,9-HxCDF	13
SFRA-161	SFRA-161	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	3.37	U	4,6-HxCDF	14
SFRA-161	SFRA-161	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	45.9	J	1,4,6-HpCDF	15
SFRA-161	SFRA-161	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	8	U	1,4,9-HpCDF	16
SFRA-161	SFRA-161	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	114		OCDF	17
SFRA-162	SFRA-162	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1110		TCDD	1
SFRA-162	SFRA-162	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.66	U	PeCDD	2
SFRA-162	SFRA-162	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.7	U	1,4-HxCDD	3
SFRA-162	SFRA-162	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	12.1	J	1,6-HxCDD	4
SFRA-162	SFRA-162	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.87	J	1,9-HxCDD	5
SFRA-162	SFRA-162	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	249		1,4,6-HpCDD	6
SFRA-162	SFRA-162	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	15200		OCDD	7
SFRA-162	SFRA-162	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9.35	J	TCDF	8
SFRA-162	SFRA-162	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.22	U	1-PeCDF	9
SFRA-162	SFRA-162	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.52	U	4-PeCDF	10
SFRA-162	SFRA-162	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.02	J	1,4-HxCDF	11
SFRA-162	SFRA-162	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.75	U	1,6-HxCDF	12
SFRA-162	SFRA-162	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	2.26	U	1,9-HxCDF	13
SFRA-162	SFRA-162	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	2.34	J	4,6-HxCDF	14
SFRA-162	SFRA-162	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	44.9	J	1,4,6-HpCDF	15
SFRA-162	SFRA-162	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.77	J	1,4,9-HpCDF	16
SFRA-162	SFRA-162	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	68.9	J	OCDF	17
SFRA-163	SFRA-163	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	0.76	U	TCDD	1
SFRA-163	SFRA-163	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	0.775	U	PeCDD	2
SFRA-163	SFRA-163	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.29	U	1,4-HxCDD	3
SFRA-163	SFRA-163	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.34	U	1,6-HxCDD	4
SFRA-163	SFRA-163	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.58	J	1,9-HxCDD	5
SFRA-163	SFRA-163	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	71.4		1,4,6-HpCDD	6
SFRA-163	SFRA-163	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12100		OCDD	7
SFRA-163	SFRA-163	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.98	J	TCDF	8
SFRA-163	SFRA-163	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.752	U	1-PeCDF	9
SFRA-163	SFRA-163	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.737	U	4-PeCDF	10
SFRA-163	SFRA-163	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.737	U	1,4-HxCDF	11
SFRA-163	SFRA-163	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.725	U	1,6-HxCDF	12

Abbreviation 1	Abbreviation 2	IUPAC name	CAS #	Type
TCDD	2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Dioxin
PeCDD	1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	Dioxin
1,4-HxCDD	1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	Dioxin
1,6-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	Dioxin
1,9-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	Dioxin
1,4,6-HpCDD	1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	Dioxin
OCDD	1,2,3,4,6,7,8,9-OCDD	Octachlorodibenzo-p-dioxin	3268-87-9	Dioxin
TCDF	2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	Furan
1-PeCDF	1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	Furan
4-PeCDF	2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	Furan
1,4-HxCDF	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	Furan
1,6-HxCDF	1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	Furan
1,9-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	Furan
4,6-HxCDF	2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	Furan
1,4,6-HpCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	Furan
1,4,9-HpCDF	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	Furan
OCDF	1,2,3,4,6,7,8,9-OCDF	Octachlorodibenzofuran	39001-02-0	Furan
PCB 77	3,3',4,4'-TCB	3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	Dioxin-like PCB
PCB 81	3,4,4',5-TCB	3,4,4',5-Tetrachlorobiphenyl	70362-50-4	Dioxin-like PCB
PCB 105	2,3,3',4,4'-PeCB	2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	Dioxin-like PCB
PCB 114	2,3,4,4',5-PeCB	2,3,4,4',5-Pentachlorobiphenyl	74472-37-0	Dioxin-like PCB
PCB 118	2,3',4,4',5-PeCB	2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	Dioxin-like PCB
PCB 123	2,3',4,4',5'-PeCB	2,3',4,4',5'-Pentachlorobiphenyl	65510-44-3	Dioxin-like PCB
PCB 126	3,3',4,4',5-PeCB	3,3',4,4',5-Pentachlorobiphenyl	57465-28-8	Dioxin-like PCB
PCB 156	2,3,3',4,4',5-HxCB	2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	Dioxin-like PCB
PCB 157	2,3,3',4,4',5'-HxCB	2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	Dioxin-like PCB
PCB 167	2,3',4,4',5,5'-HxCB	2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	Dioxin-like PCB
PCB 169	3,3',4,4',5,5'-HxCB	3,3',4,4',5,5'-Hexachlorobiphenyl	32774-16-6	Dioxin-like PCB
PCB 189	2,3,3',4,4',5,5'-HpCB	2,3,3',4,4',5,5'-Heptachlorobiphenyl	39635-31-9	Dioxin-like PCB

Acronym List

A	Data qualifier used to indicate an estimated result.
CAS	Chemical abstracts service
CLP	Contract Laboratory Program
CSM	Conceptual site model
CV	Coefficient of variation
DL	Detection limit
DU	Decision unit
E	Data qualifier used to indicate an estimated result. This qualifier indicates that the concentration exceeded the instrument calibration range, but did not saturate the detector.
EDL	Estimated detection limit
EMPC	Estimated maximum possible concentration
EPA	U.S. Environmental Protection Agency
HpCDD	Heptachlorodibenzo(p)dioxin
HpCDF	Heptachlorodibenzofuran
HxCDD	Hexachlorodibenzo(p)dioxin
HxCDF	Hexachlorodibenzofuran
ICS	Incremental composite sample
ISM	Incremental sampling methodology
ITRC	Interstate Technology and Regulatory Council
IUPAC	International Union of Pure and Applied Chemistry
J	Data qualifier used to indicate an estimated result. This qualifier indicates either: (1) a concentration between the detection limit and quantitation limit or (2) a concentration qualified as estimated because of some other quality control failure.
KM	Kaplan-Meier
ND	Nondetect
OCDD	Octachlorodibenzo(p)dioxin
OCDF	Octachlorodibenzofuran
PCB	Polychlorinated biphenyl
PeCDD	Pentachlorodibenzo(p)dioxin
PeCDF	Pentachlorodibenzofuran
QC	Quality control
R	Data qualifier used to indicate a rejected result.
RSD	Relative standard deviation
SD	Standard deviation
SOW	Scope of work
TCDD	Tetrachlorodibenzo(p)dioxin
TCDF	Tetrachlorodibenzofuran
TEC	Toxicity equivalence concentration
TEF	Toxicity equivalence factor
TEQ	Toxicity equivalence
U	Data qualifier used to indicate a nondetected result.
UCL	Upper confidence limit
WHO	World Health Organization

EPA Advanced KM TEQ Calculator

General Instructions

Password to protect/unprotect worksheets = "dioxin"

These instructions apply to this Advanced Kaplan-Meier (KM) Toxicity Equivalence (TEQ) calculator, which includes calculations that support **a simple, quasi-sensitivity analysis** that examines the effect of various ways of handling nondetected (ND) or rejected (R-flagged) analytical data results within a sample's congener profile. A Basic version of this calculator is also available for TEQ analyses uncomplicated by high-toxicity equivalence factor (TEF) non-detected congeners or rejected data, therefore it is easier to learn. Also, the Basic version is structured to assist TEQ analysis and upper confidence limit (UCL) calculations for incremental samples. Both tools are intended for use by practitioners familiar with the calculation and use of TEQ concentrations for dioxins, furans and dioxin-like PCBs.

Please read the discussion about handling nondetected and rejected congeners on the **KM Discussion** worksheet (green tab)!

BE AWARE

Individual statisticians vary in their acceptance of Helsel's adaptation of the Kaplan-Meier (KM) technique to estimate sample TEQs when nondetected congeners are present (Helsel 2009). (More details of this technique are covered in the "**KM Discussion**" worksheet.) Other methods to avoid simple substitution for nondetects were suggested by peer reviewers of this calculator, and they may be incorporated into future updates of this calculator. The user is advised to seek input from a qualified statistician if important project or site decisions are dependent upon the choice of TEQ calculation method.

Although the calculator provides estimates of specific KM TEQ results, the intent of the Advanced calculator is to provide the user with a tool for sensitivity analysis, rather than a single "answer" for the KM TEQ. The project team should consider the full range of KM TEQ results for each sample to determine whether additional sample collection is warranted to support decisions to be made based on the data.

The quasi-sensitivity analysis is performed by calculating the TEQ in various ways to estimate the consequences of using or not using ND or rejected (R) data values. Data entered into the calculator should be reviewed and validated in accordance with all project quality requirements prior to performing the sensitivity analysis.

This workbook can be used to document the approach used to calculate and choose TEQ values. It records TEQs calculated using substitution methods for NDs (0, 1/2-DL, and DL) and the KM method. It also records when R data are used at face value to assess whether the rejected congeners have a significant effect on the reported TEQ. This helps determine whether reanalysis of the sample is necessary. See discussion of ND and R data on the "**KM Discussion**" worksheet.

The workbook uses an automated macro that performs the calculations and provides error messages if necessary, allowing the user to correct and repeat the process until the data are correctly entered.

Inserting more sample rows

The "**Data Entry & Output**" sheet (**blue tab**) is designed to accommodate up to 50 samples. It is not necessary to delete blank sample rows if the data set is comprised of less than 50 samples. However, if desired, the user can remove unneeded rows using the "Remove Samples" macro button (see cells P3 to R5 of the "**Data Entry & Output**" sheet). If more than 50 samples are required, samples can be added using the "Add Samples" macro button (see cells R3 to T5 of the "**Data Entry & Output**" sheet). When run, both of these macros will prompt the user for the number of samples to be added or deleted. An error message will be provided if too many samples are to be added or removed. At least one sample must be left in the calculator to prevent errors. A maximum of 2,000 total samples is enforced based on limits to the size of an Excel 2007 worksheet.

"List" for TEQ output

To facilitate transfer of the TEQ results to another spreadsheet, each sample ID, its TEQ result, and any qualifier are reproduced in an uninterrupted list that is located **below** the data input rows in Columns AI through AM.

Excel format

Note that the calculator workbook is saved in Excel 97-2003 Workbook format (*.xls). The workbook should work properly in Excel 2007 and Excel 2010, and may be saved in Excel Macro-Enabled Workbook format (*.xlsm). In Excel 2007 and 2010 versions, the Excel Workbook format (*.xlsx) will not allow the macros in the calculator to operate properly, and should not be used to save the workbook unless all data processing is complete.

Unprotecting worksheets

To make some changes to worksheets, the user will need to unprotect the worksheet. Unprotecting the sheet can be performed using the Home/Format/Protection/Unprotect Sheet option. The password is "dioxin". **The protection will be re-enabled automatically each time the macro is run**, so it is not necessary for the user to manually reenable protection.

Instructions for Using the TEQ Calculator

Step

Enabling macros	<p>Note: Prior to their use, macros will first need to be enabled. In Excel 2007, this can be performed by selecting 'Options' on the Security Warning bar that appears below the Excel menu bars when the workbook is opened, and selecting the 'Enable this content' button, then selecting the 'OK' button. For other versions of Excel, consult Excel HELP to determine how to enable macros.</p> <p>Once macros are enabled, follow the steps below.</p>
Automated data entry	<p>Note: The "Data Import" sheet (purple tab) provides a way to enter data quickly and accurately using a flat-file format from a database, comma-separated-value file or text file. See specific instructions on the "Data Import" worksheet. In this case, Steps 1, 2 and 3 below will be performed automatically by the automated data entry macro, and the user may proceed to Step 4 immediately after the data has been imported.</p>
1	<p>Enter the sample numbers in column B of the "Data Entry & Output" sheet (blue tab). The sample numbers should be entered in the top row (Row A) of each five-row grouping. If a sample number in any Row A is left blank, the macro will stop operation after the previous sample and will not execute for any samples after this blank sample number. <u>Note that this step will be performed automatically if the automated data entry macro is used.</u></p>
Hiding columns	<p>If data are not present for all congeners, the user may leave these columns blank and may hide columns without data. As with deleting and adding rows, the user will have to unprotect the worksheet to hide or unhide columns. Columns should not be deleted from the worksheet. Hide columns using the "Home" menu: Format/Visibility/Hide & Unhide/Hide Columns.</p>
Informational data entry	<p>Cells D2 to J4 of the "Data Entry & Output" sheet (blue tab) allow the user to enter a project name, matrix (soil, groundwater, etc.), concentration units, person entering the data, and the date of the analysis. It is recommended that these be entered to assist with data interpretation. The workbook should be used for a single sampling matrix with the same concentration units. Data for other matrices should be entered into separate copies of the workbook.</p>
2	<p>Note: Step 2 is optional, but may help increase the ease, speed and accuracy of data input. <u>Note that this step will be performed automatically if the automated data entry macro is used.</u></p>
Reorder congeners to match lab report	<p>Check the order of the chemical names to ensure they are listed in the same order as the source data reports that will be used for data input. If they are not in the same order, change numbers in row 6 so that they correspond to the order on the project data reports. Then, click the beige button labeled "Sort Chemicals", which will run a macro to sort the analytes into the order specified in row 6.</p> <p>Note that the "Congener Abbreviations" sheet (orange tab) contains a table listing the IUPAC names, CAS numbers, and common abbreviations. This sheet may be useful in matching the analyte names on the data reports to those in the data entry worksheet.</p> <p>After the sort is complete, check the order of the chemicals again to ensure they are listed in the correct order. This step can be repeated as many times as necessary.</p>
3	<p>In the "Data Entry & Output" worksheet, enter the congener data into Row A for each sample, along with any analytical qualifiers that have been assigned to the congener result. Enter the qualifier after the numeric value in the same cell. For non-detected results (including EMPC or EDL results), the detection limit should be entered for the numeric result along with the qualifiers as indicated below. <u>Note that this step will be performed automatically if the automated data entry macro is used.</u></p>
Entering data	<p>The Calculator recognizes the following qualifiers:</p> <ul style="list-style-type: none"> • J, E, or A: qualifiers used to indicate the congener result is considered estimated. • U or ND: indicates the congener was not detected in the sample. • Results flagged as "UJ" should be entered with a "U" qualifier. • R: indicates the sample result for the congener result was rejected.
Qualifier entry location	<p>The numeric portion of the result should be entered first, followed by the qualifier in the same cell. The qualifiers listed above are the only ones that should be used. It is not necessary to enter a space between the number and qualifier, but entering a space is also acceptable if the user prefers that approach.</p>
Pasting data	<p>If the user wishes to copy and paste data into the "Data Entry & Output" worksheet, the Paste Values option should be used. To paste values, select "Paste" on the Excel ribbon, then "Paste Special", then "Paste As Values". Note that Row B will be automatically populated by the macro. The user should not make any entries into this row.</p>
Combining cells in the source file	<p>The source file (an electronic database or spreadsheet file) from which the data are copied for pasting into the "Data Entry & Output" worksheet will usually have the numerical value in one column and any qualifier for that data value in the next column. In the TEQ calculator, the qualifier must follow the numerical result in the same column. To reduce manual data entry effort, use the Excel CONCATENATE function or the "&" (ampersand) operator to consolidate the numerical and qualifier cells of the source file into a single cell which can then be pasted directly into the calculator.</p>

EMPC or EDL qualifiers	Note that if values qualified as "estimated maximum possible concentration" (EMPC) or "estimated detection limit" (EDL) are present, these values should be entered into the TEQ calculator as nondetects (using a U or ND qualifier) with the numerical EMPC or EDL value as the detection limit. This will ensure that these values are subjected to the full sensitivity analysis as nondetects with a maximum value of the EMPC or EDL. See the EMPC discussion in the " KM Discussion " sheet for more information.
Coeluting analytes	If coeluting analytes are present in the sampling results, the user will need to adjust the data entry accordingly. One common coeluting pair is PCB-156 and PCB-157. In this specific case, the two congeners have the same TEF. Therefore, the data can be entered in the column for PCB-156, and the column for PCB-157 can be left blank. If coeluting analytes are reported which have different TEFs, it is suggested that the results be entered for the congener with the higher TEF. However, the user can perform a sensitivity analysis by entering the sample twice, once with the coeluting analyte result entered in each column. The project team should decide how to handle such situations.
4 Running the Calculate TEQ macro	<p>Run the macro by clicking on the beige box button labeled "Calculate TEQs" (see cells R1 through T1 of the sheet "Data Entry & Output" worksheet). The macro will calculate the toxicity equivalence concentration (TEC) for each congener (in Row C) and then transfer the TECs into the "KM intermediate auto-calc" worksheet (red tab) to calculate the TEQ. The macro will then transfer the TEQ result back to the "Data Entry & Output" worksheet. After the macro run is completed, examine Row D for each sample. If there are any samples with congeners that are outlined with a border, these are results for which the user will have the option to enter substitute ("donor") values from a comparable sample (follow the instructions below). If there are no samples with congeners outlined with a border, continue with Step 6.</p> <ul style="list-style-type: none"> • Values should not be entered for any cell that is not outlined with a border. The outlined cells will fall into two categories. One category is a ND result that is the highest TEC in the sample. The other is a rejected result. • Two options are available; option 2 is preferred over option 1. Option 1 should only be used if option 2 is not possible because an analytical result for that congener from another sample cannot be defensibly substituted. • OPTION 1: <ul style="list-style-type: none"> - Enter the same value from Row B into the boxed cell in Row D. - Enter "not possible" in column BD, Row C for the sample. • OPTION 2: <ul style="list-style-type: none"> - Examine the rest of the data set and look for samples with a congener profile and concentrations very similar to the sample in question. - Confirm that the problem congener is detected in that sample. If so, evaluate whether a substitution of the detected value from that sample (a "donor" sample) can defensibly be made for the U/ND. If there is more than one value that could be substituted for the U/ND, use the most conservative (i.e., highest) value. Note that the detected value should be less than or equal to the ND value. - If there is a value from another sample that can be substituted defensibly, enter that value into the boxed cell in Row D. - If there are no values from other samples that can be substituted defensibly, OR the user prefers to not use substituted ("donor") values, enter the same value from the Row B into the cell outlined with a border in Row D. <p>Repeat the substitution process for any other congeners in this sample that are outlined with a border, but DO NOT select substitute ("donor") values from more than 1 sample for each specific sample.</p> <p>In column BD, Row C for the sample, enter the sample ID used for substitute ("donor") values for this sample. Note that this is not necessary if Option 1 above was selected, since in this case, the "donor" value comes from the same sample. However, it will be required if Option 2 is used.</p> <p>Repeat the congener substitution substeps of Step 4 for all samples.</p>
5	Click on the box labeled "Calculate TEQs" (see cells R1 through T1 of the worksheet " Data Entry & Output "). This will initiate a macro that will copy the entered data to the " KM intermediate auto-calc " worksheet and display the returned results.
6	If any error messages are displayed to the user, examine column AN to see which samples have data entry errors, and correct them (see instructions 1 through 4).
7 "Select KM TEQ" box	The macro will automatically populate the method for calculating the KM TEQ in column AN "Select KM TEQ" in the uppermost gray cell. As a default, the method that provides the highest KM TEQ will be selected. The user may override this selection and choose another method for calculating the KM TEQ. When the user chooses another method for calculating the KM TEQ in column AM for a sample, the following will be automatically updated: the sample KM TEQ and the qualifiers in columns AL and AM.

Sensitivity Analysis Summary	Column AG provides a "Summary of the Sensitivity Analysis" for a single sample by calculating the relative percent difference (RPD) between the highest and the lowest TEQ results for that sample. This gives a sense of the "spread" of TEQ results obtained from the different ways ND congeners can be handled. When there are no ND congeners, all values will be exactly the same, and Column AG reports "no difference." If ND congeners are present in the sample, the highest result will be the value obtained by substituting congener DLs for NDs, and the lowest will come from substituting zero for the NDs. If these two results are very close, the RPD may round down to 0%. If the TEQ results are near a decision threshold and a non-zero %RPD is reported, closer examination of that sample is recommended. The equation used to calculate the relative percent difference is $RPD = ((HIGHEST\ TEQ - LOWEST\ TEQ) / AVERAGE\ OF\ HIGHEST\ \&\ LOWEST\ TEQs) \times 100$, and rounded to an integer.
"Locked" feature	There is another gray box directly below the gray KM TEQ selection box discussed above. Here the user has the option to select " Locked ", or leave the cell blank (i.e., unlocked). If "Locked" is selected, the selected KM TEQ option will not be changed when the macro is run again. This can be useful if the user wants to process a few samples at a time, but not lose their selected options for previously processed data. Unlocking: although a blank cell cannot be selected by the drop-down box, the "Locked" option can be removed by deleting the cell contents with the keyboard's DELETE button. If no rejected data are present and no samples have a non-detect for the highest TEC, the macro will select "Section 1" in column AN for all samples. If no rejected data are present and a sample does have a non-detect for the highest TEC, the macro will select either "Section 2 Treatment 1" or "Section 2 Treatment 2" in column AN, whichever is most conservative (highest KM TEQ). The other treatment should be selected if appropriate and justified (for example, if Section 2 Treatment 1 is selected by the macro, the user may select Section 2 Treatment 2 if it is appropriate and justified).
Rejected data	If rejected data are present, the macro will select "Section 3" followed by "Treatment 1", "Treatment 2", "Treatment 3", or "Treatment 4" in column AN, whichever is most conservative (highest KM TEQ). The most appropriate and justified TEQ should be selected, using the following considerations: The results of the different treatments for handling "R" data should be compared to the decision threshold or used to calculate risk using appropriate risk assessment methods. <ul style="list-style-type: none"> • If the choice of treatment (from more to less conservative) significantly changes the decision outcome, sample reanalysis is advisable. To avoid repeated generation of problematic data, ask the laboratory to take corrective action in the reanalysis.
Note 1	Note regarding TEQs in column AH: Note that the result for the "TEQs from Substitution" in column AH (where NDs are counted as zero) should be the same as the Total TEQ value that is reported on Contract Laboratory Program (CLP) forms (I-HR CDD-2).
Note 2	Note regarding sample qualifiers for KM TEQ results:
J-qualified TEQ	All KM calculations include a determination of the TEC contribution to the TEQ from congener results that are qualified as non-detect, estimated or rejected. If the contribution of these "qualified" TECs to the TEQ is greater than 50 percent, the KM TEQ result is qualified as "estimated, J". The qualifier is determined by the macro, and is shown in a cell in the appropriate Section and Treatment(s), along with the fraction of the TEQ from "qualified" TECs. If a "J" is not needed, that cell will be populated with " none ".
Note 3	Note regarding TEFs:
Adjusting TEFs	The TEFs used in the calculator are from the World Health Organization (WHO) 2005 report (Van den Berg 2006). If necessary, the user can change the TEF values to earlier values, or to updated values when they become available. The TEFs can also be adjusted for additional sensitivity analysis if desired. To update the TEFs, the user should unprotect the workbook, change the TEFs of concern and then rerun the macro.
Note 4	Note regarding minimum number of detected congeners:
Minimum number of congeners	There must be at least 3 detected congeners for the methodology in the KM TEQ calculator to be meaningful. If fewer than three detected congeners are present in the results for a sample entered into the calculator, an error message will be displayed to the user. No KM TEQ calculations will be conducted for that sample. "Not calculated" will be displayed in column AN, and a note will be displayed in column BE stating that fewer than three detected results were present. For discussion, refer to the worksheet " KM Discussion " under "Treatment of Nondetected Congeners."
Note 5	Note regarding dioxin/furan contributions to sample TEQ:
D/F vs PCB contributions to total TEQ	In column AO, the "Dioxin/Furan" label on the third line for each sample refers to the percentage of TEQ contributed from dioxins and furans (the number is reported in column AP). The remaining percentage (obtained by subtracting the D/F contribution from 100) is contributed from dioxin-like PCBs.

References

Helsel, D.R. 2009. "Summing Nondetects: Incorporating Low-Level Contaminants in Risk Assessment." Integrated Environmental Assessment and Management. Volume 6, Number 3. Pages 361 through 366.

Van den Berg, M. and others. 2006. "The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds." Toxicological Sciences. Volume 93, Number 2. Pages 223 through 241.
On-Line Address: <http://epa-prgs.ornl.gov/chemicals/help/documents/vandenberg2006.pdf>

For questions or suggestions about this Calculator, contact Deana Crumbling at USEPA, crumbling.deana@epa.gov, (703) 603-0643.

EPA Advanced KM TEQ Calculator

Discussion: Calculation of Total Dioxin TEQs with Nondetect and Rejected Congeners

Helsel's Kaplan-Meier Approach

Calculation of sums or totals for multi-constituent chemicals [e.g., total dioxin TEQs, total PCBs, total polycyclic aromatic hydrocarbons (PAHs), etc.] has typically involved simple substitution of zero, one-half the detection limit (DL), or the DL for left-censored (nondetect or less-than values) congeners. Because this practice introduces bias to estimates used in statistical calculations, however, many sources now strongly recommend against the use of arbitrary surrogate values for nondetects (Helsel 1990, 2005a, 2005b, 2009; EPA 2006, 2009a, 2009b).

Helsel (2009) describes an approach for calculating totals using the KM product limit estimator, which is based on the following relationship between the "mean" of the toxic equivalence concentrations (TECs) and total TEQ for samples containing multiple congeners:

$$\text{total concentration} = \text{"mean" TEC} \times n \quad (\text{where } n \text{ is the number of congeners})$$

Note that this "mean" TEC is an intermediate value in the calculation that has no relationship to a mean TEQ for replicate DU samples. The KM estimator is a nonparametric maximum likelihood estimator that has been widely used in survival and failure analysis for more than 50 years (Kaplan and Meier 1958, Klein and Moeschberger 2003, Meeker and Escobar 1998). The KM estimator has only recently come into use in environmental assessment studies (Helsel 2005a), and is currently a default method used in EPA's ProUCL software for calculating the 95% UCL of the mean for data with one or more censored results (EPA 2009a, 2009b).

Treatment of Nondetected Congeners

For the purposes of this dioxin reassessment UFP-QAPP template, the intermediate KM "mean" is recommended for use in calculating total dioxin TEQs, using the general equation presented above, in all cases where a) some fraction of the congeners are nondetect, and b) there are at least three detected congeners. Additional guidelines for calculating the KM intermediate "mean" are provided below. If all congeners are detected, then the intermediate "mean" calculated by the equation is the arithmetic average of all the congeners' TECs.

How many detected congeners are needed to calculate a TEQ?

If only one or two congeners are detected, then there is no statistically satisfactory method for calculating the dioxin TEQ that adequately accounts for the uncertainty introduced by nondetect congener results. In this case, the intermediate "mean" should be calculated as

the congener in question, substitution of a value (straight substitution, an average of several, or a maximum) from the other DUs may be made. Fortunately, many laboratories have lower detection limits for TCDD and TCDF than for the congeners with lower TEFs, and this somewhat mitigates this problem.

the arithmetical average, where simple substitution is used for nondetects. A quasi-sensitivity analysis approach is recommended, wherein substitution of both zero and the DL are used to calculate lower- and upper-bound estimates for the total TEQ. Compare the TEQs from both approaches to assess whether they have the same decision outcome. Substitution of one-half the DL can be used to calculate a "middle-of-the-road" value, although it should be acknowledged that the uncertainty of this estimate may be unacceptable for decision making.

In cases where critical decisions hinge on total TEQ estimates with mostly nondetect results, project teams are advised to consider

- consulting personnel with expertise in statistics,
- reanalyzing existing samples (if archived samples are available and meet holding times),
- comparing with the results from nearby similar DUs and the CSM, or
- collecting additional samples.

The stepwise KM approach for calculating the total dioxin TEQ for individual samples is described below:

- Step 1. Calculate the TEC for each congener by multiplying the results for individual congeners by their congener-specific TEF (van den Berg and others 2006). For nondetect congeners, the reporting limit or DL should be multiplied by the TEF.
- Step 2. Calculate the intermediate "mean" TEC for each sample using a KM calculator spreadsheet. If all the congeners are detected, then calculate the intermediate value as the arithmetic mean. If nondetects are present and at least three results are detected, calculate the KM intermediate using one of the options described below. If only one or two congeners are detected, use simple substitution and a quasi-sensitivity analysis approach, as discussed above.
- Step 3. Calculate the total dioxin TEQ using: Total TEQ = intermediate "mean" TEC x n, where n is the number of congeners in the calculation.

Helsel (2009) discusses several potential contraindications for calculation of the KM mean. The first concerns cases where only a single DL is used for all nondetect congeners. This is not expected to occur for calculation of total dioxin TEQs, since results for individual congeners are first multiplied by congener-specific TEFs. The second contraindication is when the maximum reported result is a nondetect, high-toxicity (i.e., TEF close to 1) congener. This is problematic, as the KM method will effectively ignore maximum results that are censored. Helsel (2009) suggests that the DL be substituted in these cases, but that it should be acknowledged that this represents a worst-case scenario. Another option is to compare the congener concentration and congener profile of the sample with a high TEF nondetect to results from similar (per the CSM) DUs. If the congener profiles are similar, but the other DUs have a detection for

- (3) Commercial or other statistical software. The KM model is included in many mainstream statistical software packages, as well as public domain (including the R language) programs. Helsel (2005a) discusses an approach for "flipping" data for

Helsel (2009) does not discuss the minimum number of detected results required to estimate the KM mean, but a practical minimum of three detected results is recommended. Cases where only one or two congeners are detected are discussed above. Lastly, Helsel (2009) recommends that for left-censored environmental data, Efron's method should always be used. This simply requires that the minimum result always be treated as a detected result. The manner in which Efron's method is incorporated in calculations of the KM mean depends on the specific software or approach used. For example, for programs that require a "flag" to distinguish between detected and nondetect data, one only needs to use the appropriate flag for detected data to qualify the minimum result(s).

Three options are described below for calculation of the KM mean:

- (1) Helsel's KM Excel spreadsheet model (available from www.practicalstats.com). This spreadsheet has been built into a workbook designed specifically for calculating the TEQ from raw data congener concentration data. Raw data are entered into one spreadsheet, which automatically calculates the toxic equivalent concentration (TEC) for each congener. The TECs are copied and pasted by a macro into a second spreadsheet in the workbook that performs the KM calculation. This produces an intermediate value (the KM "mean") which is transferred by the macro back to the first spreadsheet. The intermediate result is then automatically multiplied by the number of congeners to produce the total TEQ for the sample. Detailed instructions for using the spreadsheets are included in the Excel workbook's spreadsheets.
- (2) Alternatively, EPA's ProUCL software may be used. Before estimates of the KM intermediate "mean" TEC can be calculated, the congener concentration results (in ppt) must be converted to congener TECs by multiplying each congener by its TEF. This must be done independently before the TECs are put into ProUCL for the KM calculation. (ProUCL cannot do the TEC calculation.) The TECs are then entered into ProUCL and the KM intermediate "mean" is automatically calculated for data sets with one or more nondetect results. EPA (2009a, 2009b) should be consulted for instructions for entering data into ProUCL, since a coding procedure must be used in ProUCL to "tell it" which congener TECs were from ND values. Note that in order to use Efron's method, the minimum result should be coded as a detected result. If intermediate "means" are required for multiple samples, then each sample needs to be identified using a "grouping" variable (see EPA 2009a). For each sample, the KM intermediate "mean" will need to be extracted from the ProUCL report, and manually multiplied by the number of congeners to produce the total TEQ result for that sample.

Treatment of EMPC values and qualified data

EPA's Contract Laboratory Program Statement of Work (CLP SOW) for dioxin analysis specifies the reporting of detected congeners as "EMPC" values ("estimated maximum possible concentration") when a congener peak is present at an acceptable signal-to-noise ratio, but ion abundance criteria are not met for definitive identification of that congener. The CLP SOW excludes these values from the calculation of TEQ. EPA Method 8290A also specifies the reporting of EMPC values but makes no recommendations concerning their use in TEQ calculations. EMPC values are generally qualified as estimated concentrations ("J") or nondetect values ("U") during data validation in accordance with EPA Functional Guidelines. When qualified "J", EMPC values can be applied along with other J-qualified congener results in TEQ calculation and risk assessment (T

use in commercial packages, which emphasize treatment of right-censored data. Experienced users may elect to use alternative approaches for calculation of the KM intermediate "mean," but must use methods employing Efron's method, and must demonstrate that results are comparable to the intermediate "means" calculated using Options (1) or (2) above.

Treatment of R-Qualified Congeners

One additional component for assessing the uncertainty of estimates of the intermediate KM "mean" and total TEQ, concerns treatment of rejected (R-qualified) data. It is possible to reject individual congener analytes based on ion abundance, the signal-to-noise ratio, relative retention time, a low laboratory control sample result, gross blank contamination, or other analyte-specific criteria. For non-dioxin individual chemicals with multiple-sample sets (i.e., sufficient sample-sizes to support calculations), rejected data are always excluded from calculations in environmental assessments. However, for calculation of the "mean" (and total) for a set of congeners, there is concern that exclusion of rejected data may bias estimates low or create a need for replacement data (resampling or reanalysis). The magnitude (and importance) of this bias will of course depend on the values reported for R-qualified data and the overall dioxin concentration in relation to decision-making thresholds, as well as the congener-specific TEFs.

Although rejected data should not be included in final calculations of TEQ for a given sampling or decision unit, rejected data values (concentrations or detection limits) can be included in KM "mean" and total TEQ calculations early in the data evaluation process. These TEQs can be compared to TEQs calculated with the rejected values removed. This quasi-sensitivity approach, similar to that recommended above for nondetect values, will assist project teams in assessing the magnitude of impacts from rejected data and the need for replacement data (Replacement data may require reanalysis of samples at the laboratory, with laboratory corrective actions or method refinements as needed, or the collection of additional samples from the site). Rejected data can be further evaluated through professional judgment, such as whether a rejected congener may be present at a concentration that could affect the TEQ based on historical site information or data from surrounding decision units. For example, project teams could use the KM calculator to further assess how high the concentration of a rejected congener would have to be to affect the TEQ, and then compare this estimate to concentrations for this congener that are present in other decision units, or in comparable historical data sets.

(continued)

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with other J-qualified congener results in TEQ calculation and risk assessment (J-qualified data are generally applied like unqualified data under EPA risk assessment protocols). EMPC values qualified "U" can be treated as other nondetect values using the KM approach described above. Given that use of EMPC values may overestimate the TEQ and associated dioxin risk, project teams may again elect to perform a quasi-sensitivity analysis by calculating TEQ without the EMPC values. As for rejected data, significant effects from EMPC values may require corrective action to improve data quality (such as sample reanalysis).

Therefore, for congeners that are influential (high-toxicity, TEF close to 1, or high concentration) in calculations of the intermediate "mean" and total TEQ, rejected and qualified data may require further evaluation by project teams. The uncertainty of calculating total TEQs, as can be demonstrated through sensitivity analyses, should be addressed in the uncertainty section of assessment documents, and taken into account in decision making.

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name: Strecker Forest Remedial Action
 Matrix: Soil
 Units: PG/G
 Data entered by: R. Tisdale
 Date entered: 7/17/2014

protect/unprotect sheet password = dioxin
 ch'd by DMC 30Jul14
SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF
SFRA-55: Row A	13800	16.6 U	36.7 J	150 J	54.8 J	1430	14000	78.6 J	16.1 U	16 U	33.2 U	19.3 J	37.5 U	22.1 U	453 J	38.7 U
value to use: Row B	13800	16.6	36.7	150	54.8	1430	14000	78.6	16.1	16	33.2	19.3	37.5	22.1	453	38.7
congener TEC: Row C	13800	16.6	3.67	15	5.48	14.3	4.2	7.86	0.483	4.8	3.32	1.93	3.75	2.21	4.53	0.387
donor value to use: Row D																
donor TEC: Row E																
SFRA-56: Row A	15600	21.4 J	25.8 U	256 J	81.2 J	4360	38000	88.6 J	11.1 U	23.6 U	39.2 J	30.6 U	36.7 U	40.3 J	937	95 J
value to use: Row B	15600	21.4	25.8	256	81.2	4360	38000	88.6	11.1	23.6	39.2	30.6	36.7	40.3	937	95
congener TEC: Row C	15600	21.4	2.58	25.6	8.12	43.6	11.4	8.86	0.333	7.08	3.92	3.06	3.67	4.03	9.37	0.95
donor value to use: Row D																
donor TEC: Row E																
SFRA-57: Row A	344	1.96 U	3.86 J	25 U	9.11 U	705	13400	3.82 J	1.49 U	1.65 U	4.35 J	2.66 U	3.66 U	4.02 J	148	11.3 J
value to use: Row B	344	1.96	3.86	25	9.11	705	13400	3.82	1.49	1.65	4.35	2.66	3.66	4.02	148	11.3
congener TEC: Row C	344	1.96	0.386	2.5	0.911	7.05	4.02	0.382	0.0447	0.495	0.435	0.266	0.366	0.402	1.48	0.113
donor value to use: Row D																
donor TEC: Row E																
SFRA-58: Row A	26000	11.8 U	16.2 U	102 J	32.7 J	901	10900	132	7.89 U	12.9 U	13.1 U	13.3 U	18.5 U	19.8 J	251 J	21.3 J
value to use: Row B	26000	11.8	16.2	102	32.7	901	10900	132	7.89	12.9	13.1	13.3	18.5	19.8	251	21.3
congener TEC: Row C	26000	11.8	1.62	10.2	3.27	9.01	3.27	13.2	0.2367	3.87	1.31	1.33	1.85	1.98	2.51	0.213
donor value to use: Row D																
donor TEC: Row E																
SFRA-59: Row A	3890	1.54 J	3.05 J	28.6 JQ	12.2 J	392	9570	21.1	1.25 J	3.14 J	3.53 U	3 U	1.55 U	4.51 U	81.9	4.97 J
value to use: Row B	3890	1.54	3.05	28.6	12.2	392	9570	21.1	1.25	3.14	3.53	3	1.55	4.51	81.9	4.97
congener TEC: Row C	3890	1.54	0.305	2.86	1.22	3.92	2.871	2.11	0.0375	0.942	0.353	0.3	0.155	0.451	0.819	0.0497
donor value to use: Row D																
donor TEC: Row E																
SFRA-60: Row A	5520	6.16 J	13 U	47.1 J	13.6 U	600	12900	29.4 J	4.62 U	6.34 J	5.41 U	5.61 U	8.56 U	5.94 U	123 J	12 J
value to use: Row B	5520	6.16	13	47.1	13.6	600	12900	29.4	4.62	6.34	5.41	5.61	8.56	5.94	123	12
congener TEC: Row C	5520	6.16	1.3	4.71	1.36	6	3.87	2.94	0.1386	1.902	0.541	0.561	0.856	0.594	1.23	0.12
donor value to use: Row D																
donor TEC: Row E																
SFRA-61: Row A	2490	2.22 U	2.95 J	25.7 J	8.9 J	387	12200	12.1 J	0.881 U	1.98 U	2.73 U	2.4 U	3.72 U	3.1 U	88.3	4.22 U
value to use: Row B	2490	2.22	2.95	25.7	8.9	387	12200	12.1	0.881	1.98	2.73	2.4	3.72	3.1	88.3	4.22
congener TEC: Row C	2490	2.22	0.295	2.57	0.89	3.87	3.66	1.21	0.02643	0.594	0.273	0.24	0.372	0.31	0.883	0.0422
donor value to use: Row D																
donor TEC: Row E																
SFRA-62: Row A	1460	4.33 J	4.85 J	24.7 U	12 J	304	9040	7.84 J	2.87 J	4.73 J	5.3 U	4.61 J	4.31 U	5.25 J	61.8	7.81 U
value to use: Row B	1460	4.33	4.85	24.7	12	304	9040	7.84	2.87	4.73	5.3	4.61	4.31	5.25	61.8	7.81
congener TEC: Row C	1460	4.33	0.485	2.47	1.2	3.04	2.712	0.784	0.0861	1.419	0.53	0.461	0.431	0.525	0.618	0.0781
donor value to use: Row D																
donor TEC: Row E																
SFRA-63: Row A	2.72 J	1.12 U	1.25 U	1.33 U	1.37 U	20.3 J	8050	0.887 U	0.562 U	0.522 U	0.649 U	0.645 U	1.01 U	0.667 U	0.798 J	1 U
value to use: Row B	2.72	1.12	1.25	1.33	1.37	20.3	8050	0.887	0.562	0.522	0.649	0.645	1.01	0.667	0.798	1

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

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Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF
donor TEC: Row E																
SFRA-72: Row A	573	9.06 J	54.1 QU	964 Q	405 Q	9020	52500	12.2 J	6.15 J	19.7 J	117 Q	55.5 J	17.3 U	92.4	1200	116
value to use: Row B	573	9.06	54.1	964	405	9020	52500	12.2	6.15	19.7	117	55.5	17.3	92.4	1200	116
congener TEC: Row C	573	9.06	5.41	96.4	40.5	90.2	15.75	1.22	0.1845	5.91	11.7	5.55	1.73	9.24	12	1.16
donor value to use: Row D																
donor TEC: Row E																
SFRA-73: Row A	3090	4.57 U	5.88 U	65	24.7 J	896	14000	21.1	2.92 U	4.18 J	7.56 J	6.08 J	4.72 U	8.08 J	204	13.1 J
value to use: Row B	3090	4.57	5.88	65	24.7	896	14000	21.1	2.92	4.18	7.56	6.08	4.72	8.08	204	13.1
congener TEC: Row C	3090	4.57	0.588	6.5	2.47	8.96	4.2	2.11	0.0876	1.254	0.756	0.608	0.472	0.808	2.04	0.131
donor value to use: Row D																
donor TEC: Row E																
SFRA-74: Row A	12000	13.4 U	22.8 QU	171 JQ	51.6 J	1260	13600	64.4 J	11.9 U	11.8 U	20.9 U	22 U	18.8 U	17.6 J	330 J	24.4 U
value to use: Row B	12000	13.4	22.8	171	51.6	1260	13600	64.4	11.9	11.8	20.9	22	18.8	17.6	330	24.4
congener TEC: Row C	12000	13.4	2.28	17.1	5.16	12.6	4.08	6.44	0.357	3.54	2.09	2.2	1.88	1.76	3.3	0.244
donor value to use: Row D																
donor TEC: Row E																
SFRA-75: Row A	4690	6.24 U	10.5 QU	125 JQ	35.1 J	1300	18800	30.1 J	4.05 U	7.69 U	12.1 U	9.47 U	10.8 U	11.9 J	286	20.4 J
value to use: Row B	4690	6.24	10.5	125	35.1	1300	18800	30.1	4.05	7.69	12.1	9.47	10.8	11.9	286	20.4
congener TEC: Row C	4690	6.24	1.05	12.5	3.51	13	5.64	3.01	0.1215	2.307	1.21	0.947	1.08	1.19	2.86	0.204
donor value to use: Row D																
donor TEC: Row E																
SFRA-76: Row A	941	2.65 U	6.09 U	12.5 U	6.55 U	172	17400	6.18 J	2.26 U	2.13 U	3.02 U	2.95 U	5.1 U	3.04 U	31 J	5.6 U
value to use: Row B	941	2.65	6.09	12.5	6.55	172	17400	6.18	2.26	2.13	3.02	2.95	5.1	3.04	31	5.6
congener TEC: Row C	941	2.65	0.609	1.25	0.655	1.72	5.22	0.618	0.0678	0.639	0.302	0.295	0.51	0.304	0.31	0.056
donor value to use: Row D																
donor TEC: Row E																
SFRA-77: Row A	1020	4.79 U	8.93 U	28.9 J	10.1 J	485	23800	10 J	3.03 U	2.98 U	6.44 J	4.96 J	5.93 U	3.75 U	98.4	7.99 U
value to use: Row B	1020	4.79	8.93	28.9	10.1	485	23800	10	3.03	2.98	6.44	4.96	5.93	3.75	98.4	7.99
congener TEC: Row C	1020	4.79	0.893	2.89	1.01	4.85	7.14	1	0.0909	0.894	0.644	0.496	0.593	0.375	0.984	0.0799
donor value to use: Row D																
donor TEC: Row E																
SFRA-78: Row A	2430	3.9 J	9.23 QU	124 Q	36.7 J	821	8100	14.3	2.45 J	5.93 J	8.82 J	5.78 J	5.4 U	13 J	194	13 J
value to use: Row B	2430	3.9	9.23	124	36.7	821	8100	14.3	2.45	5.93	8.82	5.78	5.4	13	194	13
congener TEC: Row C	2430	3.9	0.923	12.4	3.67	8.21	2.43	1.43	0.0735	1.779	0.882	0.578	0.54	1.3	1.94	0.13
donor value to use: Row D																
donor TEC: Row E																
SFRA-79: Row A	1500	4.09 U	11.7 QU	69.8 Q	16.8 J	449	5060	9.31 J	4.2 U	4.09 U	5.28 U	4.93 U	5.17 U	4.84 U	105	7.54 J
value to use: Row B	1500	4.09	11.7	69.8	16.8	449	5060	9.31	4.2	4.09	5.28	4.93	5.17	4.84	105	7.54
congener TEC: Row C	1500	4.09	1.17	6.98	1.68	4.49	1.518	0.931	0.126	1.227	0.528	0.493	0.517	0.484	1.05	0.0754
donor value to use: Row D																
donor TEC: Row E																
SFRA-80: Row A	745	3.45 U	7.73 U	28.4 J	8.23 U	391	8240	4.21 J	2.69 U	2.55 U	4.31 U	3.81 U	6.38 U	4.55 U	97.9	7.26 U

Sample notes

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name: Strecker Forest Remedial Action
 Matrix: Soil
 Units: PG/G
 Data entered by: R. Tisdale
 Date entered: 7/17/2014

protect/unprotect sheet password = dioxin
 ch'd by DMC 30Jul14
SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01	
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF	
72	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	745 745	3.45 3.45	7.73 0.773	28.4 2.84	8.23 0.823	391 3.91	8240 2.472	4.21 0.421	2.69 0.0807	2.55 0.765	4.31 0.431	3.81 0.381	6.38 0.638	4.55 0.455	97.9 0.979	7.26 0.0726
73	SFRA-81: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	240 240	1.76 U 1.76	4.12 QU 0.412	13.2 JQ 1.32	4.37 U 0.437	145 1.45	7740 2.322	5.17 J 0.517	3.8 J 0.114	1.09 U 0.327	4.64 J 0.464	1.93 U 0.193	3.03 U 0.303	2.02 U 0.202	33.9 J 0.339	3 U 0.03
74	SFRA-82: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	677 677	5.12 J 5.12	5.43 U 0.543	38.4 JQ 3.84	15 J 1.5	377 3.77	15100 4.53	9.19 J 0.919	11.2 J 0.336	5.95 U 1.785	15.3 J 1.53	8.06 J 0.806	6.97 J 0.697	6.92 J 0.692	86.6 0.866	12.3 J 0.123
75	SFRA-83: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	887 887	4.67 J 4.67	4.08 J 0.408	57.7 Q 5.77	24.1 J 2.41	502 5.02	11900 3.57	6.11 J 0.611	4.01 J 0.1203	3.07 J 0.921	6.69 J 0.669	5.38 J 0.538	4.74 J 0.474	7.15 J 0.715	123 1.23	10.4 J 0.104
76	SFRA-84: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	421 421	3.81 J 3.81	6.11 U 0.611	24.4 J 2.44	11.6 J 1.16	400 4	12400 3.72	16.1 1.61	17.9 J 0.537	6.7 J 2.01	24.7 J 2.47	7.88 U 0.788	8.98 U 0.898	6.87 J 0.687	86.3 0.863	16 J 0.16
77	SFRA-85: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	1250 1250	3.94 U 3.94	6.56 U 0.656	56.2 JQ 5.62	21.6 J 2.16	465 4.65	11500 3.45	12.4 1.24	5.95 J 0.1785	5.32 U 1.596	9.56 J 0.956	5.97 U 0.597	4.66 J 0.466	6.61 J 0.661	104 1.04	8.97 J 0.0897
78	SFRA-86: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	745 745	1.57 U 1.57	3.11 J 0.311	9.82 J 0.982	6.1 J 0.61	219 2.19	8390 2.517	4.56 U 0.456	1.97 U 0.0591	2.45 U 0.735	2.43 U 0.243	2.31 U 0.231	1.9 U 0.19	2.49 J 0.249	35.3 J 0.353	2.36 J 0.0236
79	SFRA-87: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	226 226	1.45 U 1.45	1.99 U 0.199	6.12 J 0.612	2.09 U 0.209	112 1.12	5020 1.506	3.58 J 0.358	0.964 J 0.02892	0.859 J 0.2577	1.19 U 0.119	1.11 U 0.111	1.65 U 0.165	1.15 U 0.115	16.4 J 0.164	2.2 U 0.022
80	SFRA-88: Row A value to use: Row B congener TEC: Row C	139 139	1.47 U 1.47	4.38 U 0.438	5.39 J 0.539	4.5 U 0.45	161 1.61	7160 2.148	2.26 U 0.226	1.76 J 0.0528	0.933 U 0.2799	1.98 J 0.198	2.04 J 0.204	2.1 U 0.21	1.51 U 0.151	21 J 0.21	2.5 U 0.025

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name: Strecker Forest Remedial Action
 Matrix: Soil
 Units: PG/G
 Data entered by: R. Tisdale
 Date entered: 7/17/2014

protect/unprotect sheet password = dioxin
 ch'd by DMC 30Jul14
SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF
donor value to use: Row D																
donor TEC: Row E																
SFRA-89: Row A	595	2.82 U	8.42 QU	69.9 Q	12.2 QU	358	14400	9.13 J	2.9 J	6.36 J	5.94 J	6.52 J	4.36 U	4.8 J	78.8	4.86 U
value to use: Row B	595	2.82	8.42	69.9	12.2	358	14400	9.13	2.9	6.36	5.94	6.52	4.36	4.8	78.8	4.86
congener TEC: Row C	595	2.82	0.842	6.99	1.22	3.58	4.32	0.913	0.087	1.908	0.594	0.652	0.436	0.48	0.788	0.0486
donor value to use: Row D																
donor TEC: Row E																
SFRA-90: Row A	543	4.1 U	6.04 U	107	31.3 J	2210	27800	8.24 J	3.01 J	7.59 J	31.7 J	11.9 J	9.64 J	19.8 J	333	29.4 J
value to use: Row B	543	4.1	6.04	107	31.3	2210	27800	8.24	3.01	7.59	31.7	11.9	9.64	19.8	333	29.4
congener TEC: Row C	543	4.1	0.604	10.7	3.13	22.1	8.34	0.824	0.0903	2.277	3.17	1.19	0.964	1.98	3.33	0.294
donor value to use: Row D																
donor TEC: Row E																
SFRA-91: Row A	778	2.44 U	14.8 JQ	72.4 Q	21.6 J	1010	14300	6.7 J	1.56 J	4.02 J	14.2 J	6.04 J	2.88 J	9.37 J	160	12.9 J
value to use: Row B	778	2.44	14.8	72.4	21.6	1010	14300	6.7	1.56	4.02	14.2	6.04	2.88	9.37	160	12.9
congener TEC: Row C	778	2.44	1.48	7.24	2.16	10.1	4.29	0.67	0.0468	1.206	1.42	0.604	0.288	0.937	1.6	0.129
donor value to use: Row D																
donor TEC: Row E																
SFRA-92: Row A	2.92 J	1.01 U	2.31 U	2.25 U	2.42 U	64.9	4650	1.46 J	1.06 U	1.03 U	1.13 U	1.04 U	1.64 U	1.11 U	4.77 J	2.11 U
value to use: Row B	2.92	1.01	2.31	2.25	2.42	64.9	4650	1.46	1.06	1.03	1.13	1.04	1.64	1.11	4.77	2.11
congener TEC: Row C	2.92	1.01	0.231	0.225	0.242	0.649	1.395	0.146	0.0318	0.309	0.113	0.104	0.164	0.111	0.0477	0.0211
donor value to use: Row D																
donor TEC: Row E																
SFRA-93: Row A	895	2.49 U	11.4 J	32.9 J	14.3 J	757	12300	9.96 J	2.14 U	3.93 J	13.1 J	6.11 J	3.81 J	7.89 J	127	9.77 J
value to use: Row B	895	2.49	11.4	32.9	14.3	757	12300	9.96	2.14	3.93	13.1	6.11	3.81	7.89	127	9.77
congener TEC: Row C	895	2.49	1.14	3.29	1.43	7.57	3.69	0.996	0.0642	1.179	1.31	0.611	0.381	0.789	1.27	0.0977
donor value to use: Row D																
donor TEC: Row E																
SFRA-94: Row A	2980	13.7 U	5.53 J	19.8 J	7.94 J	355	11000	18.8	1.7 J	2.26 J	5.31 J	2.58 J	2.56 U	3.34 J	55.9 J	4.94 J
value to use: Row B	2980	13.7	5.53	19.8	7.94	355	11000	18.8	1.7	2.26	5.31	2.58	2.56	3.34	55.9	4.94
congener TEC: Row C	2980	13.7	0.553	1.98	0.794	3.55	3.3	1.88	0.051	0.678	0.531	0.258	0.256	0.334	0.559	0.0494
donor value to use: Row D																
donor TEC: Row E																
SFRA-95: Row A	16300	8.47 U	28 U	110 J	29.9 U	1050	13300	91.2	9.85 U	9.64 U	23.3 U	13.9 U	23.5 U	23.5 U	575	33.2 U
value to use: Row B	16300	8.47	28	110	29.9	1050	13300	91.2	9.85	9.64	23.3	13.9	23.5	23.5	575	33.2
congener TEC: Row C	16300	8.47	2.8	11	2.99	10.5	3.99	9.12	0.2955	2.892	2.33	1.39	2.35	2.35	5.75	0.332
donor value to use: Row D																
donor TEC: Row E																
SFRA-96: Row A	964	4.12 U	11.1 QU	34.7 JQ	12.3 U	376	9070	8.31 J	3.79 J	3.85 J	7.52 J	7.56 U	10.9 U	7.14 U	74.7	7.98 J
value to use: Row B	964	4.12	11.1	34.7	12.3	376	9070	8.31	3.79	3.85	7.52	7.56	10.9	7.14	74.7	7.98
congener TEC: Row C	964	4.12	1.11	3.47	1.23	3.76	2.721	0.831	0.1137	1.155	0.752	0.756	1.09	0.714	0.747	0.0798
donor value to use: Row D																
donor TEC: Row E																

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name: Strecker Forest Remedial Action

Matrix: Soil

Units: PG/G

Data entered by: R. Tisdale

Date entered: 7/17/2014

ch'd by DMC 30Jul14

protect/unprotect sheet password = dioxin

SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Project Name: Strecker Forest Remedial Action

Matrix: Soil

Units: PG/G

Data entered by: R. Tisdale

Date entered: 7/17/2014

ch'd by DMC 30Jul14

protect/unprotect sheet password = dioxin

SITE DATA

Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01
Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,9-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

		(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 1					
		Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values					
		Treatment 1		Treatment 1: Make highest U value a D					
		Qualifier and Qualifier Fractions		Qualifier and Qualifier Fractions					
Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution	KM Method		KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions
			U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	
1	SFRA-5: Row A	61.3							
	value to use: Row B	61.3							
	congener TEC: Row C	0.01839	9%	12.7503	13.3854	14.0206	13.0999	none	Section 1
	donor value to use: Row D							<i>Locked</i>	
	donor TEC: Row E								
2	SFRA-6: Row A	3.04 J							
	value to use: Row B	3.04							
	congener TEC: Row C	0.000912	15%	4.3976	4.7474	5.0972	4.4553	none	Section 1
	donor value to use: Row D							<i>Locked</i>	
	donor TEC: Row E								
3	SFRA-7: Row A	40.7 J							
	value to use: Row B	40.7							
	congener TEC: Row C	0.01221	1%	1082.8886	1087.0776	1091.2666	1084.4930	none	Section 1
	donor value to use: Row D							<i>Locked</i>	
	donor TEC: Row E								
4	SFRA-8: Row A	229 J							
	value to use: Row B	229							
	congener TEC: Row C	0.0687	0%	10331.5407	10335.4975	10339.4543	10333.6015	none	Section 1
	donor value to use: Row D							<i>Locked</i>	
	donor TEC: Row E								
5	SFRA-9: Row A	131 J							
	value to use: Row B	131							
	congener TEC: Row C	0.0393	0%	3590.7892	3593.72185	3596.6545	3592.3260	none	Section 1
	donor value to use: Row D							<i>Locked</i>	
	donor TEC: Row E								
6	SFRA-10: Row A	0.761 J							
	value to use: Row B	0.761							
	congener TEC: Row C	0.0002283	4%	6.8703283	7.0110743	7.1518203	6.8892	none	Section 1
	donor value to use: Row D							<i>Locked</i>	
	donor TEC: Row E								
7	SFRA-11: Row A	125 J							
	value to use: Row B	125							
	congener TEC: Row C	0.0375	0%	4950.6085	4958.3045	4966.0005	4953.8700	none	Section 1
	donor value to use: Row D							<i>Locked</i>	
	donor TEC: Row E								

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of Sensitivity Analysis (relative percent difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and there are no rejected ("R") values

Highest TEC value is a NONDETE rejected ("

Treatment 1

Treatment 1: Make highest U value a D

Sample notes	Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution			KM Method			Treatment 1		Treatment 1: Make highest U value a D
				U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Qualifier Fractions	
8	SFRA-12: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	49.4 J 49.4 0.01482	1%	1084.9678	1087.9069	1090.8460	1085.8649	none	Section 1 Locked	1085.8649 Qualified Dioxin/Furan	none 1% 100%	
9	SFRA-13: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	213 213 0.0639	0%	3090.1040	3096.6830	3103.2620	3092.3211	none	Section 1 Locked	3092.3211 Qualified Dioxin/Furan	none 0% 100%	
10	SFRA-14: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	90.6 J 90.6 0.02718	1%	5677.0512	5695.9847	5714.9182	5681.1709	none	Section 1 Locked	5681.1709 Qualified Dioxin/Furan	none 1% 100%	
11	SFRA-15: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	375 J 375 0.1125	0%	17448.3295	17468.4240	17488.5185	17455.3273	none	Section 1 Locked	17455.3273 Qualified Dioxin/Furan	none 0% 100%	
12	SFRA-16: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	77.8 J 77.8 0.02334	0%	3718.9304	3722.7347	3726.5389	3720.3646	none	Section 1 Locked	3720.3646 Qualified Dioxin/Furan	none 0% 100%	
13	SFRA-17: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	7.84 U 7.84 0.002352	159%	1.449	7.092876	12.736752	Not calculated		Insufficient Data	<4.5 ppt TEQ <3 congeners were detects, so KM TEQ can't be calculated.		
14	SFRA-18: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	145 J 145 0.0435	0%	4840.6085	4848.235	4855.8615	4844.5407	none	Section 1 Locked	4844.5407 Qualified Dioxin/Furan	none 0% 100%	

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity /

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample ID:
(must enter on Row A)

OCDF

Summary of
Sensitivity
Analysis
(relative
percent
difference)

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

Sample notes

15

SFRA-19: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

215 J
215
0.0645

0%

4554.0185

4559.3435

4564.6685

4556.9028

none

Section 1
Locked

4556.9028
Qualified
Dioxin/Furan

none
0%
100%

16

SFRA-20: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

430
430
0.129

0%

5870.6650

5870.9865

5871.3080

5870.7955

none

Section 1
Locked

5870.7955
Qualified
Dioxin/Furan

none
0%
100%

17

SFRA-21: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

67 J
67
0.0201

0%

1507.1299

1509.4428

1511.7556

1507.9946

none

Section 1
Locked

1507.9946
Qualified
Dioxin/Furan

none
1%
100%

18

SFRA-22: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

4870
4870
1.461

2%

294.4510

297.3605

300.2700

296.9301

none

Section 1
Locked

296.9301
Qualified
Dioxin/Furan

none
4%
100%

19

SFRA-23: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

237
237
0.0711

0%

4736.6075

4736.9325

4737.2575

4736.9399

none

Section 1
Locked

4736.9399
Qualified
Dioxin/Furan

none
0%
100%

20

SFRA-24: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

231
231
0.0693

1%

424.2029

425.5359

426.8689

424.9590

none

Section 1
Locked

424.9590
Qualified
Dioxin/Furan

none
1%
100%

21

SFRA-26: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

549
549
0.1647

1%

595.7467

597.9572

600.1677

597.3020

none

Section 1
Locked

597.3020
Qualified
Dioxin/Furan

none
3%
100%

22

SFRA-27: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

611
611
0.1833

2%

183.4503

185.74505

188.0398

184.6942

none

Section 1
Locked

184.6942
Qualified
Dioxin/Furan

none
7%
100%

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

		(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 1					
		Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values					
		Treatment 1		Treatment 1: Make highest U value a D					
		Qualifier and Qualifier Fractions		Qualifier and Qualifier Fractions					
Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution	KM Method		KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions
			U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	
23	SFRA-28: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	69.2 J 69.2 0.02076 0%	1225.5738	1228.5638	1231.5538	1226.9658	none	Section 1 Locked	1226.9658 none Qualified 1% Dioxin/Furan 100%
24	SFRA-29: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	22.4 J 22.4 0.00672 21%	12.2093	13.6727	15.1361	12.4169	J	Section 1 Locked	12.4169 J Qualified 74% Dioxin/Furan 100%
25	SFRA-30: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	1150 J 1150 0.345 1%	11080.5710	11118.2860	11156.0010	11100.0258	none	Section 1 Locked	11100.0258 none Qualified 1% Dioxin/Furan 100%
26	SFRA-31: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	501 J 501 0.1503 0%	20381.4803	20399.1328	20416.7853	20387.3933	none	Section 1 Locked	20387.3933 none Qualified 0% Dioxin/Furan 100%
27	SFRA-32: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	137 137 0.0411 0%	3208.1990	3212.5280	3216.8570	3210.5930	none	Section 1 Locked	3210.5930 none Qualified 0% Dioxin/Furan 100%
28	SFRA-33: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	220 J 220 0.066 0%	24427.2960	24451.9125	24476.5290	24434.8933	none	Section 1 Locked	24434.8933 none Qualified 0% Dioxin/Furan 100%
29	SFRA-37: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	175 J 175 0.0525 0%	6701.7618	6709.10925	6716.4567	6705.1978	none	Section 1 Locked	6705.1978 none Qualified 0% Dioxin/Furan 100%
30	SFRA-38: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	97 J 97 0.0291 0%	2575.1623	2576.4133	2577.6643	2575.8983	none	Section 1 Locked	2575.8983 none Qualified 0% Dioxin/Furan 100%

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

		(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 2					
		Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values					
		Treatment 1		Treatment 1: Make highest U value a D					
		Qualifier and Qualifier Fractions		Qualifier and Qualifier Fractions					
Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution	KM Method		KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions
			U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	
31	SFRA-39: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	121 J 121 0.0363 0%	3218.2484	3220.2282	3222.2079	3219.0432	none	Section 1 Locked	3219.0432 none Qualified 0% Dioxin/Furan 100%
32	SFRA-40: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	624 624 0.1872 3%	215.0922	217.8276	220.5630	216.9045	none	Section 1 Locked	216.9045 none Qualified 9% Dioxin/Furan 100%
33	SFRA-41: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	567 J 567 0.1701 0%	13350.7651	13359.5885	13368.4119	13355.6920	none	Section 1 Locked	13355.6920 none Qualified 0% Dioxin/Furan 100%
34	SFRA-42: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	226 J 226 0.0678 0%	6184.2578	6197.2063	6210.1548	6189.2020	none	Section 1 Locked	6189.2020 none Qualified 1% Dioxin/Furan 100%
35	SFRA-43: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	301 J 301 0.0903 0%	20737.2603	20755.8833	20774.5063	20743.6186	none	Section 1 Locked	20743.6186 none Qualified 0% Dioxin/Furan 100%
36	SFRA-44: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	661 J 661 0.1983 0%	14088.7383	14098.1282	14107.5180	14092.9647	none	Section 1 Locked	14092.9647 none Qualified 1% Dioxin/Furan 100%
37	SFRA-45: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	209 J 209 0.0627 0%	10620.9127	10637.7912	10654.6697	10626.0415	none	Section 1 Locked	10626.0415 none Qualified 0% Dioxin/Furan 100%
38	SFRA-46: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	559 J 559 0.1677 0%	30745.6677	30767.7772	30789.8867	30753.4820	none	Section 1 Locked	30753.4820 none Qualified 0% Dioxin/Furan 100%

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample notes

Sample ID:
(must enter on Row A)

OCDF

Summary of
Sensitivity
Analysis
(relative
percent
difference)

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

39

SFRA-47: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

28.9 J
28.9
0.00867

0%

4316.0507 4319.2411 4322.4316

4316.8886

none

Section 1
Locked

4316.8886
Qualified
Dioxin/Furan

none
0%
100%

40

SFRA-48: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

101 J
101
0.0303

0%

7333.2593 7344.0208 7354.7822

7336.5565

none

Section 1
Locked

7336.5565
Qualified
Dioxin/Furan

none
0%
100%

41

SFRA-49: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

75.9 J
75.9
0.02277

0%

1419.6229 1421.0852 1422.5475

1420.3690

none

Section 1
Locked

1420.3690
Qualified
Dioxin/Furan

none
1%
100%

42

SFRA-50: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

190
190
0.057

0%

2676.5124 2678.4139 2680.3154

2677.4838

none

Section 1
Locked

2677.4838
Qualified
Dioxin/Furan

none
0%
100%

43

SFRA-51: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

136 J
136
0.0408

0%

4397.1978 4405.4994 4413.8009

4399.7186

none

Section 1
Locked

4399.7186
Qualified
Dioxin/Furan

none
1%
100%

44

SFRA-52: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

120 J
120
0.036

0%

2412.9150 2413.0523 2413.1896

2413.0482

none

Section 1
Locked

2413.0482
Qualified
Dioxin/Furan

none
0%
100%

45

SFRA-53: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

581 J
581
0.1743

0%

42634.0843 42663.5553 42693.0263

42642.5125

none

Section 1
Locked

42642.5125
Qualified
Dioxin/Furan

none
0%
100%

46

SFRA-54: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

622 J
622
0.1866

0%

19727.6466 19736.2834 19744.9202

19731.1324

none

Section 1
Locked

19731.1324
Qualified
Dioxin/Furan

none
0%
100%

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity /

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Sample ID:
(must enter on Row A)

OCDF

Summary of
Sensitivity
Analysis
(relative
percent
difference)

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

Sample notes

47

SFRA-55: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

423 J
423
0.1269

0%

13857.0969 13872.8719 13888.6469

13865.2950

none

Section 1
Locked

13865.2950

none
Qualified 1%
Dioxin/Furan 100%

48

SFRA-56: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

3970
3970
1.191

0%

15738.4410 15746.8025 15755.1640

15742.8603

none

Section 1
Locked

15742.8603

none
Qualified 1%
Dioxin/Furan 100%

49

SFRA-57: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

1040
1040
0.312

2%

358.5800 361.8514 365.1227

360.0630

none

Section 1
Locked

360.0630

none
Qualified 2%
Dioxin/Furan 100%

50

SFRA-58: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

450 J
450
0.135

0%

26043.7880 26054.7964 26065.8047

26048.0980

none

Section 1
Locked

26048.0980

none
Qualified 0%
Dioxin/Furan 100%

51

SFRA-59: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

201
201
0.0603

0%

3906.7345 3907.3640 3907.9935

3907.0164

none

Section 1
Locked

3907.0164

none
Qualified 0%
Dioxin/Furan 100%

52

SFRA-60: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

386 J
386
0.1158

0%

5547.0478 5549.7231 5552.3984

5548.1511

none

Section 1
Locked

5548.1511

none
Qualified 0%
Dioxin/Furan 100%

53

SFRA-61: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

177
177
0.0531

0%

2503.4311 2505.4699 2507.5087

2504.0979

none

Section 1
Locked

2504.0979

none
Qualified 0%
Dioxin/Furan 100%

54

SFRA-62: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

143
143
0.0429

0%

1475.7030 1477.4576 1479.2121

1476.5431

none

Section 1
Locked

1476.5431

none
Qualified 1%
Dioxin/Furan 100%

SFRA-63: Row A
value to use: Row B

2.92 U
2.92

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

Sample notes

Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution			KM Method			(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity
			U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ
55	WHO 2005 TEFs = 0.0003	33%	5.3460	6.3885	7.4311	5.4142	J	Section 1 Locked	5.4142	J Qualified 68% Dioxin/Furan 100%	Treatment 1: Make highest U value a D
56	SFRA-64: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	29%	8.6432	10.0988	11.5544	8.9192	J	Section 1 Locked	8.9192	J Qualified 77% Dioxin/Furan 100%	
57	SFRA-65: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	8%	44.3772	46.2261	48.0750	44.7106	none	Section 1 Locked	44.7106	none Qualified 8% Dioxin/Furan 100%	
58	SFRA-66: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	2%	250.5436	252.7762	255.0088	251.1918	none	Section 1 Locked	251.1918	none Qualified 3% Dioxin/Furan 100%	
59	SFRA-67: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	158%	0.8000	3.8524	6.9049	Not calculatec		Insufficient Data Locked	<3.2 ppt TEQ <3 congeners were detects, so KM TEQ can't be calculated.		
60	SFRA-68: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	3%	148.0881	150.6985	153.3089	148.9442	none	Section 1 Locked	148.9442	none Qualified 5% Dioxin/Furan 100%	
61	SFRA-69: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	131%	1.2160	3.5363	5.8566	Not calculatec		Insufficient Data Locked	<2 ppt TEQ <3 congeners were detects, so KM TEQ can't be calculated.		
62	SFRA-70: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	4%	95.6972	97.4290	99.1607	96.2692	none	Section 1 Locked	96.2692	none Qualified 5% Dioxin/Furan 100%	
63	SFRA-71: Row A value to use: Row B congener TEC: Row C donor value to use: Row D	68%	4.0830	6.2080	8.3329	Not calculatec		Insufficient Data	<5 ppt TEQ <3 congeners were detects, so		

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of Sensitivity Analysis (relative percent difference)

TEQs from Substitution

KM Method

(Quasi) Sensitivity Analysis SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and there are no rejected ("R") values

Highest TEC value is a NONDETE rejected ("

Treatment 1

Treatment 1: Make highest U value a D

Sample notes	Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution			KM Method			(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity
				U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ
64	donor TEC: Row E SFRA-72: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	2260 2260 0.678	1%	872.5525	876.1225	879.6925	874.1738	none	Section 1 Locked	874.1738 Qualified Dioxin/Furan	none 3% 100%	
65	donor TEC: Row E SFRA-73: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	586 586 0.1758	0%	3120.0128	3122.8716	3125.7304	3121.5097	none	Section 1 Locked	3121.5097 Qualified Dioxin/Furan	none 0% 100%	
66	donor TEC: Row E SFRA-74: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	602 J 602 0.1806	0%	12050.6206	12063.6161	12076.6116	12056.8090	none	Section 1 Locked	12056.8090 Qualified Dioxin/Furan	none 0% 100%	
67	donor TEC: Row E SFRA-75: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	1090 1090 0.327	0%	4732.2410	4738.7188	4745.1965	4735.1300	none	Section 1 Locked	4735.1300 Qualified Dioxin/Furan	none 1% 100%	
68	donor TEC: Row E SFRA-76: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	58.1 J 58.1 0.01743	1%	948.8854	952.5543	956.2232	949.6661	none	Section 1 Locked	949.6661 Qualified Dioxin/Furan	none 1% 100%	
69	donor TEC: Row E SFRA-77: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	246 246 0.0738	1%	1039.0878	1042.9457	1046.8036	1040.5329	none	Section 1 Locked	1040.5329 Qualified Dioxin/Furan	none 1% 100%	
70	donor TEC: Row E SFRA-78: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	353 353 0.1059	0%	2468.8284	2469.5599	2470.2914	2469.2436	none	Section 1 Locked	2469.2436 Qualified Dioxin/Furan	none 1% 100%	
71	donor TEC: Row E SFRA-79: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	145 145 0.0435	1%	1516.7679	1521.0854	1525.4029	1518.0692	none	Section 1 Locked	1518.0692 Qualified Dioxin/Furan	none 1% 100%	
	SFRA-80: Row A	189										

KM TEQ can't be calculated.

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

		WHO 2005 TEFs = 0.0003		Summary of Sensitivity Analysis (relative percent difference)			TEQs from Substitution			KM Method			(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 1	
													Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values	
													Treatment 1		Treatment 1: Make highest U value a D	
Sample notes	Sample ID: (must enter on Row A)	OCDF				U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	
72	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	189 0.0567	1%			755.6787	759.6134	763.5480	757.1773	none	Section 1 <i>Locked</i>	757.1773 Qualified Dioxin/Furan	none 1% 100%			
73	SFRA-81: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	55.1 J 55.1 0.01653	1%			246.5425	248.3745	250.2065	247.2545	none	Section 1 <i>Locked</i>	247.2545 Qualified Dioxin/Furan	none 3% 100%			
74	SFRA-82: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	200 200 0.06	0%			701.7890	702.9530	704.1170	702.6622	none	Section 1 <i>Locked</i>	702.6622 Qualified Dioxin/Furan	none 3% 100%			
75	SFRA-83: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	220 220 0.066	No difference			914.2963	914.2963	914.2963	914.2963	none	Section 1 <i>Locked</i>	914.2963 Qualified Dioxin/Furan	none 1% 100%			
76	SFRA-84: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	183 183 0.0549	1%			444.5219	445.6704	446.8189	445.5234	none	Section 1 <i>Locked</i>	445.5234 Qualified Dioxin/Furan	none 3% 100%			
77	SFRA-85: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	194 194 0.0582	1%			1270.5694	1273.9639	1277.3584	1272.3360	none	Section 1 <i>Locked</i>	1272.3360 Qualified Dioxin/Furan	none 1% 100%			
78	SFRA-86: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	112 J 112 0.0336	0%			752.2692	754.0113	755.7533	752.8970	none	Section 1 <i>Locked</i>	752.8970 Qualified Dioxin/Furan	none 1% 100%			
79	SFRA-87: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	38.6 J 38.6 0.01158	1%			230.0582	231.2532	232.4482	230.4318	none	Section 1 <i>Locked</i>	230.4318 Qualified Dioxin/Furan	none 2% 100%			
80	SFRA-88: Row A value to use: Row B congener TEC: Row C	76.8 J 76.8 0.02304	2%			143.9848	145.6098	147.2347	144.7117	none	Section 1	144.7117	none			

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

Sample notes

		(Quasi) Sensitivity Analysis SECTION 1		(Quasi) Sensitivity Analysis SECTION 1										
		Highest TEC value is a DETECT, and there are no rejected ("R") values		Highest TEC value is a NONDETECT, and there are no rejected ("R") values										
		Treatment 1		Treatment 1: Make highest U value a D										
Sample ID: (must enter on Row A)	OCDF	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution			KM Method			KM TEQ	Qualifier and Qualifier Fractions		KM TEQ	Qualifier and Qualifier Fractions	
			U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ		Qualifier	Fractions		Qualifier	Fractions
donor value to use: Row D donor TEC: Row E														
SFRA-89: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	63.4 J 63.4 0.01902	1%	615.3310	618.0143	620.6976	616.6388	none	Section 1 <i>Locked</i>	616.6388	none	Qualified Dioxin/Furan	3% 100%		
SFRA-90: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	899 899 0.2697	1%	601.6590	604.0110	606.3630	603.3551	none	Section 1 <i>Locked</i>	603.3551	none	Qualified Dioxin/Furan	3% 100%		
SFRA-91: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	286 286 0.0858	0%	810.2566	811.4766	812.6966	811.1422	none	Section 1 <i>Locked</i>	811.1422	none	Qualified Dioxin/Furan	1% 100%		
SFRA-92: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	8.67 U 8.67 0.002601	40%	5.1577	6.4400	7.7222	5.4337	J	Section 1 <i>Locked</i>	5.4337	J	Qualified Dioxin/Furan	74% 100%		
SFRA-93: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	301 301 0.0903	0%	918.8440	920.1211	921.3982	919.6881	none	Section 1 <i>Locked</i>	919.6881	none	Qualified Dioxin/Furan	1% 100%		
SFRA-94: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	89 J 89 0.0267	0%	2994.5441	3001.5221	3008.5001	2995.5589	none	Section 1 <i>Locked</i>	2995.5589	none	Qualified Dioxin/Furan	1% 100%		
SFRA-95: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	745 745 0.2235	0%	16340.5835	16353.6833	16366.7830	16343.5929	none	Section 1 <i>Locked</i>	16343.5929	none	Qualified Dioxin/Furan	0% 100%		
SFRA-96: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	220 220 0.066	1%	977.6955	982.2055	986.7155	980.2980	none	Section 1 <i>Locked</i>	980.2980	none	Qualified Dioxin/Furan	2% 100%		

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

		WHO 2005 TEFs = 0.0003	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution			KM Method			(Quasi) Sensitivity Analysis SECTION 1	(Quasi) Sensitivity Analysis SECTION 1
		OCDF		U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ	Highest TEC value is a DETECT, and there are no rejected ("R") values	Highest TEC value is a NONDETECT, and there are no rejected ("R") values
Sample notes	Sample ID: (must enter on Row A)								Treatment 1	Treatment 1: Make highest U value a D	
									Qualifier and Qualifier Fractions	Qualifier and Qualifier Fractions	
89	SFRA-97: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	70.4 J 70.4 0.02112	2%	150.7288	152.4253	154.1218	151.6264	none	Section 1 Locked	151.6264 Qualified Dioxin/Furan	none 4% 100%
90	SFRA-98: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	377 377 0.1131	0%	3223.2301	3223.3991	3223.5681	3223.3538	none	Section 1 Locked	3223.3538 Qualified Dioxin/Furan	none 0% 100%
91	SFRA-99: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	212 J 212 0.0636	0%	3960.7776	3967.9206	3975.0636	3963.4144	none	Section 1 Locked	3963.4144 Qualified Dioxin/Furan	none 1% 100%
92	value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										

DATA LIST

List of TEQ results to copy and paste into other spreadsheets, such as ProUCL
CAUTION: double-check entries and gray cells for anomalous entries

Line	Sample ID	TEQ Result	Qualifier
Line #1	SFRA-5	13.0999	
Line #2	SFRA-6	4.4553	
Line #3	SFRA-7	1084.4930	
Line #4	SFRA-8	10333.6015	
Line #5	SFRA-9	3592.3260	
Line #6	SFRA-10	6.8892	
Line #7	SFRA-11	4953.8700	
Line #8	SFRA-12	1085.8649	
Line #9	SFRA-13	3092.3211	
Line #10	SFRA-14	5681.1709	
Line #11	SFRA-15	17455.3273	
Line #12	SFRA-16	3720.3646	

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

Sample ID:
(must enter on Row A)

OCDF

TEQs from Substitution

KM Method

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

Qualifier and Qualifier
Fractions

Qualifier and
Qualifier Fractions

Sample notes

Line #13	SFRA-17	<4.5 ppt	<3 congeners were detects, so KM TEQ can't be calculated.
Line #14	SFRA-18	4844.5407	
Line #15	SFRA-19	4556.9028	
Line #16	SFRA-20	5870.7955	
Line #17	SFRA-21	1507.9946	
Line #18	SFRA-22	296.9301	
Line #19	SFRA-23	4736.9399	
Line #20	SFRA-24	424.9590	
Line #21	SFRA-26	597.301955	
Line #22	SFRA-27	184.694208	
Line #23	SFRA-28	1226.96583	
Line #24	SFRA-29	12.4169485	J
Line #25	SFRA-30	11100.0258	
Line #26	SFRA-31	20387.3933	
Line #27	SFRA-32	3210.59301	
Line #28	SFRA-33	24434.8933	
Line #29	SFRA-37	6705.1978	
Line #30	SFRA-38	2575.89828	
Line #31	SFRA-39	3219.04318	
Line #32	SFRA-40	216.904545	
Line #33	SFRA-41	13355.692	
Line #34	SFRA-42	6189.20204	
Line #35	SFRA-43	20743.6186	
Line #36	SFRA-44	14092.9647	
Line #37	SFRA-45	10626.0415	
Line #38	SFRA-46	30753.482	
Line #39	SFRA-47	4316.88857	
Line #40	SFRA-48	7336.55648	
Line #41	SFRA-49	1420.36903	
Line #42	SFRA-50	2677.48382	
Line #43	SFRA-51	4399.71859	
Line #44	SFRA-52	2413.04819	
Line #45	SFRA-53	42642.5125	
Line #46	SFRA-54	19731.1324	
Line #47	SFRA-55	13865.295	
Line #48	SFRA-56	15742.8603	
Line #49	SFRA-57	360.063017	
Line #50	SFRA-58	26048.098	
Line #51	SFRA-59	3907.01644	
Line #52	SFRA-60	5548.15112	
Line #53	SFRA-61	2504.09793	
Line #54	SFRA-62	1476.54309	

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order: 17

WHO 2005 TEFs = 0.0003

Summary of
Sensitivity
Analysis
(relative
percent
difference)

Sample ID:
(must enter on Row A)

OCDF

TEQs from Substitution

KM Method

U = 0 &
sum

U = 1/2 DL
& sum

U = DL &
sum

Sample KM
TEQ

Qualifier

Select KM TEQ

(Quasi) Sensitivity Analysis
SECTION 1

(Quasi) Sensitivity

Highest TEC value is a DETECT, and
there are no rejected ("R") values

Highest TEC value is a NONDETE
rejected ("

Treatment 1

Treatment 1:
Make highest U value a D

KM TEQ

Qualifier and Qualifier
Fractions

KM TEQ

Qualifier and
Qualifier Fractions

Sample notes

Line #55	SFRA-63	5.41417571	J
Line #56	SFRA-64	8.91919107	J
Line #57	SFRA-65	44.710615	
Line #58	SFRA-66	251.191757	
Line #59	SFRA-67	<3.2 ppt	<3 congeners were detects, so KM TEQ can't be calculated.
Line #60	SFRA-68	148.944197	
Line #61	SFRA-69	<2 ppt	<3 congeners were detects, so KM TEQ can't be calculated.
Line #62	SFRA-70	96.2691916	
Line #63	SFRA-71	<5 ppt	<3 congeners were detects, so KM TEQ can't be calculated.
Line #64	SFRA-72	874.17375	
Line #65	SFRA-73	3121.50974	
Line #66	SFRA-74	12056.809	
Line #67	SFRA-75	4735.13	
Line #68	SFRA-76	949.666079	
Line #69	SFRA-77	1040.53292	
Line #70	SFRA-78	2469.24362	
Line #71	SFRA-79	1518.06922	
Line #72	SFRA-80	757.177314	
Line #73	SFRA-81	247.254509	
Line #74	SFRA-82	702.662182	
Line #75	SFRA-83	914.2963	
Line #76	SFRA-84	445.52336	
Line #77	SFRA-85	1272.33602	
Line #78	SFRA-86	752.896977	
Line #79	SFRA-87	230.431842	
Line #80	SFRA-88	144.711705	
Line #81	SFRA-89	616.638832	
Line #82	SFRA-90	603.355083	
Line #83	SFRA-91	811.14215	
Line #84	SFRA-92	5.43366427	J
Line #85	SFRA-93	919.68805	
Line #86	SFRA-94	2995.5589	
Line #87	SFRA-95	16343.5929	
Line #88	SFRA-96	980.298036	
Line #89	SFRA-97	151.626407	
Line #90	SFRA-98	3223.3538	
Line #91	SFRA-99	3963.4144	

<3 congeners were detects, so KM TEQ can't be calculated.

<3 congeners were detects, so KM TEQ can't be calculated.

<3 congeners were detects, so KM TEQ can't be calculated.

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-5: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-6: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-7: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-8: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-9: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-10: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-11: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-12: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-13: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-14: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-15: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-16: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-17: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-18: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-19: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-20: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-21: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-22: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-23: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-24: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-26: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-27: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-28: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-29: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-30: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-31: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-32: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-33: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-37: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-38: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-39: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-40: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-41: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-42: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-43: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-44: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-45: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-46: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-47: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-48: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-49: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-50: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-51: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-52: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-53: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-54: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
SFRA-55: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-56: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-57: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-58: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-59: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-60: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-61: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-62: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-63: Row A value to use: Row B		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 2:
Substitute comparable "donor"
value for highest U

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
55 congener TEC: Row C donor value to use: Row D donor TEC: Row E		
56 SFRA-64: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
57 SFRA-65: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
58 SFRA-66: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
59 SFRA-67: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
60 SFRA-68: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
61 SFRA-69: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
62 SFRA-70: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
63 SFRA-71: Row A value to use: Row B congener TEC: Row C donor value to use: Row D		

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions
KM TEQ	Qualifier Fractions
donor TEC: Row E	
SFRA-72: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-73: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-74: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-75: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-76: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-77: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-78: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-79: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
SFRA-80: Row A	

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 2:
Substitute comparable "donor"
value for highest U

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E SFRA-81: Row A		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E SFRA-82: Row A		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E SFRA-83: Row A		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E SFRA-84: Row A		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E SFRA-85: Row A		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E SFRA-86: Row A		
value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E SFRA-87: Row A		
value to use: Row B congener TEC: Row C		

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EPA Advanced KM TEQ Calculator

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performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID: (must enter on Row A)	Qualifier and Qualifier Fractions	KM TEQ
donor value to use: Row D donor TEC: Row E		
SFRA-89: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-90: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-91: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-92: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-93: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-94: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-95: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		
SFRA-96: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E		

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Chemical Sort Order:

WHO 2005 TEFs =

**Treatment 2:
Substitute comparable "donor"
value for highest U**

Sample notes

Sample ID:
(must enter on Row A)

**Qualifier and
Qualifier Fractions**

SFRA-97: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

KM TEQ

89

SFRA-98: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

90

SFRA-99: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

91

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

92

KM TEQ

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order:
WHO 2005 TEFs =

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Treatment 2:
Substitute comparable "donor"
value for highest U

Sample notes

Sample ID:
(must enter on Row A)

Qualifier and
KM TEQ Qualifier Fractions

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order:
WHO 2005 TEFs =

Analysis SECTION 2

CT ("U" or "ND"), and there are no
R") values

Treatment 2:
Substitute comparable "donor"
value for highest U

Sample notes

Sample ID:
(must enter on Row A)

Qualifier and
KM TEQ Qualifier Fractions

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	
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Sample notes

Sample ID: (must enter on Row A)	Qualifier and KM TEQ	Qualifier and Qualifier Fractions	Qualifier and KM TEQ	Qualifier and Qualifier Fractions	Qualifier and KM TEQ	Qualifier and Qualifier Fractions	Qualifier and KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
SFRA-19: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-20: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-21: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-22: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-23: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-24: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-26: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-27: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	
--	---	--	--	--

Sample notes

Sample ID: (must enter on Row A)	Qualifier and KM TEQ Qualifier Fractions	Qualifier and KM TEQ Qualifier Fractions	Qualifier and KM TEQ Qualifier Fractions	Qualifier and KM TEQ Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
SFRA-28: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						
SFRA-29: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						
SFRA-30: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						
SFRA-31: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						
SFRA-32: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						
SFRA-33: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						
SFRA-37: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						
SFRA-38: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E						

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	
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Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
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SFRA-39: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

32

SFRA-40: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

33

SFRA-41: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

34

SFRA-42: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

35

SFRA-43: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

36

SFRA-44: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

37

SFRA-45: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

38

SFRA-46: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

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performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	
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Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--	--

SFRA-47: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

39

SFRA-48: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

40

SFRA-49: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

41

SFRA-50: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

42

SFRA-51: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

43

SFRA-52: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

44

SFRA-53: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

45

SFRA-54: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

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performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	
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Sample notes

Sample ID:
(must enter on Row A)

KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	Will sample reanalysis be requested?	Sample ID used for "donor" values
--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--------	--------------------------------------	--	--

SFRA-55: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

47

SFRA-56: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

48

SFRA-57: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

49

SFRA-58: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

50

SFRA-59: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

51

SFRA-60: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

52

SFRA-61: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

53

SFRA-62: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

54

SFRA-63: Row A
value to use: Row B

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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Sample ID: (must enter on Row A)	Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)		Treatment 2: TEQ as simple sum when R & U treated as normal detects		Treatment 3: Used if "donor" value is available for R values		Treatment 4: Used if "donor" values are available for R and U values		Will sample reanalysis be requested?	Sample ID used for "donor" values
	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions		
55 congener TEC: Row C donor value to use: Row D donor TEC: Row E										
56 SFRA-64: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
57 SFRA-65: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
58 SFRA-66: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
59 SFRA-67: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
60 SFRA-68: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
61 SFRA-69: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
62 SFRA-70: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
63 SFRA-71: Row A value to use: Row B congener TEC: Row C donor value to use: Row D										

Sample notes

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EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID: (must enter on Row A)	Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)		Treatment 2: TEQ as simple sum when R & U treated as normal detects		Treatment 3: Used if "donor" value is available for R values		Treatment 4: Used if "donor" values are available for R and U values		Will sample reanalysis be requested?	Sample ID used for "donor" values
	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions		
donor TEC: Row E										
SFRA-72: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-73: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-74: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-75: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-76: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-77: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-78: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-79: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-80: Row A										

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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values
---	--	---	---

Sample notes

Sample ID: (must enter on Row A)	Treatment 1		Treatment 2		Treatment 3		Treatment 4		Will sample reanalysis be requested?	Sample ID used for "donor" values
	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions		
72										
73										
74										
75										
76										
77										
78										
79										
80										

value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-81: Row A
 value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-82: Row A
 value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-83: Row A
 value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-84: Row A
 value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-85: Row A
 value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-86: Row A
 value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-87: Row A
 value to use: Row B
congener TEC: Row C
 donor value to use: Row D
donor TEC: Row E
SFRA-88: Row A
 value to use: Row B
congener TEC: Row C

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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values
---	--	---	---

Sample notes

Sample ID: (must enter on Row A)	Qualifier and		Qualifier and		Qualifier and		Qualifier and		Will sample reanalysis be requested?	Sample ID used for "donor" values
	KM TEQ	Qualifier Fractions	KM TEQ	Qualifier Fractions	KM TEQ	Qualifier Fractions	KM TEQ	Qualifier Fractions		
donor value to use: Row D donor TEC: Row E										
SFRA-89: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-90: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-91: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-92: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-93: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-94: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-95: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
SFRA-96: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										

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Advanced KM TEQ calculator for
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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Sample ID: (must enter on Row A)	Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)		Treatment 2: TEQ as simple sum when R & U treated as normal detects		Treatment 3: Used if "donor" value is available for R values		Treatment 4: Used if "donor" values are available for R and U values		Will sample reanalysis be requested?	Sample ID used for "donor" values
	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions	KM TEQ	Qualifier and Qualifier Fractions		
89 SFRA-97: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
90 SFRA-98: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
91 SFRA-99: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										
92 value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E										

Sample notes

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(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Sample ID:

(must enter on Row A)

Sample notes

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	Will sample reanalysis be requested?	Sample ID used for "donor" values
KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions		

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Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

(Quasi) Sensitivity Analysis SECTION 3

Rejected ("R") value(s) are present; nondetected values ("U" or "ND") may or may not be present, and the highest TEC may or may not be a nondetected

Chemical Sort Order:

WHO 2005 TEFs =

Sample ID:

(must enter on Row A)

Sample notes

Treatment 1: TEQ as simple sum when R & U treated as 0 (minimum)	Treatment 2: TEQ as simple sum when R & U treated as normal detects	Treatment 3: Used if "donor" value is available for R values	Treatment 4: Used if "donor" values are available for R and U values	Will sample reanalysis be requested?	Sample ID used for "donor" values
KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions	KM TEQ Qualifier and Qualifier Fractions		

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

SFRA-5: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

SFRA-6: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

SFRA-7: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

SFRA-8: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

SFRA-9: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

SFRA-10: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

SFRA-11: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

1

2

3

4

5

6

7

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

8

SFRA-12: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

9

SFRA-13: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

10

SFRA-14: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

11

SFRA-15: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

12

SFRA-16: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

13

SFRA-17: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

Fewer than 3 detected results.
Refer to KM Discussion
worksheet for discussion.

14

SFRA-18: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

15

SFRA-19: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

16

SFRA-20: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

17

SFRA-21: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

18

SFRA-22: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

19

SFRA-23: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

20

SFRA-24: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

21

SFRA-26: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

22

SFRA-27: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

23

SFRA-28: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

24

SFRA-29: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

25

SFRA-30: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

26

SFRA-31: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

27

SFRA-32: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

28

SFRA-33: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

29

SFRA-37: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

30

SFRA-38: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

31

SFRA-39: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

32

SFRA-40: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

33

SFRA-41: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

34

SFRA-42: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

35

SFRA-43: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

36

SFRA-44: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

37

SFRA-45: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

38

SFRA-46: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

39

SFRA-47: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

40

SFRA-48: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

41

SFRA-49: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

42

SFRA-50: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

43

SFRA-51: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

44

SFRA-52: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

45

SFRA-53: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

46

SFRA-54: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

47

SFRA-55: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

48

SFRA-56: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

49

SFRA-57: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

50

SFRA-58: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

51

SFRA-59: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

52

SFRA-60: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

53

SFRA-61: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

54

SFRA-62: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

SFRA-63: Row A
value to use: Row B

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

Chemical Sort Order:		result.
WHO 2005 TEFs = Sample ID: (must enter on Row A)		Comment
55	congener TEC: Row C donor value to use: Row D donor TEC: Row E	
56	SFRA-64: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
57	SFRA-65: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
58	SFRA-66: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
59	SFRA-67: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	Fewer than 3 detected results. Refer to KM Discussion worksheet for discussion.
60	SFRA-68: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
61	SFRA-69: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	Fewer than 3 detected results. Refer to KM Discussion worksheet for discussion.
62	SFRA-70: Row A value to use: Row B congener TEC: Row C donor value to use: Row D donor TEC: Row E	
63	SFRA-71: Row A value to use: Row B congener TEC: Row C donor value to use: Row D	Fewer than 3 detected results. Refer to KM Discussion worksheet for discussion.

Sample notes

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

donor TEC: Row E

SFRA-72: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

64

SFRA-73: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

65

SFRA-74: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

66

SFRA-75: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

67

SFRA-76: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

68

SFRA-77: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

69

SFRA-78: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

70

SFRA-79: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

71

SFRA-80: Row A

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

72

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

SFRA-81: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

73

SFRA-82: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

74

SFRA-83: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

75

SFRA-84: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

76

SFRA-85: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

77

SFRA-86: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

78

SFRA-87: Row A

value to use: Row B

congener TEC: Row C

donor value to use: Row D

donor TEC: Row E

79

SFRA-88: Row A

value to use: Row B

congener TEC: Row C

80

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

donor value to use: Row D
donor TEC: Row E

SFRA-89: Row A

value to use: Row B
congener TEC: Row C

81

donor value to use: Row D
donor TEC: Row E

SFRA-90: Row A

value to use: Row B
congener TEC: Row C

82

donor value to use: Row D
donor TEC: Row E

SFRA-91: Row A

value to use: Row B
congener TEC: Row C

83

donor value to use: Row D
donor TEC: Row E

SFRA-92: Row A

value to use: Row B
congener TEC: Row C

84

donor value to use: Row D
donor TEC: Row E

SFRA-93: Row A

value to use: Row B
congener TEC: Row C

85

donor value to use: Row D
donor TEC: Row E

SFRA-94: Row A

value to use: Row B
congener TEC: Row C

86

donor value to use: Row D
donor TEC: Row E

SFRA-95: Row A

value to use: Row B
congener TEC: Row C

87

donor value to use: Row D
donor TEC: Row E

SFRA-96: Row A

value to use: Row B
congener TEC: Row C

88

donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

89

SFRA-97: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

90

SFRA-98: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

91

SFRA-99: Row A
value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

92

value to use: Row B
congener TEC: Row C
donor value to use: Row D
donor TEC: Row E

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
performing quasi-sensitivity analyses

result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for
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result.

Chemical Sort Order:

WHO 2005 TEFs =

Sample notes

Sample ID:
(must enter on Row A)

Comment

EPA Advanced KM TEQ Calculator

Automated Data Entry Worksheet

This worksheet is the data entry point for data sets that the user wants to automatically import into the "Data Entry and Output" worksheet. Users should copy data from a comma-delimited file or other text file, Excel worksheet, or other output from a database query and paste it into the table below, then click the "Transfer Data" button above to transfer the formatted data to the "Data Entry & Output" worksheet. The source data should be arranged in columns identical to the order of columns shown below before copying the data into the table. Excel's "Paste Values" tool can also be used to preserve the formatting of the table.

The fields designated as "required" must be included in the data query. The fields designated as "optional" should either contain the data specified, or may be left blank. The fields in Columns G and H will be automatically populated by the macro. The data query may include a field that specifies the order that the samples will appear in the "Data Entry & Output" worksheet. If this field is left blank, the importation macro will sort on the sample ID instead. Note that if the sample order is omitted, the sample IDs will be sorted as text values, and may not sort samples in numerical order as expected (for example; 1, 10, 11, 2, 3, 4, 5, 6, 7, 8, 9 instead of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11). Note that the user should ensure that the "Data Entry & Output" worksheet has enough samples for the sample data set being imported. See the "Instructions" worksheet for guidance on adding samples.

The "Congener Name" field in Column C is intended to be the name used by the project team in order to preserve project sample nomenclature. The "Congener Abbreviation" in Column G is the abbreviation used by this Calculator. These fields may not be identical, but should refer to the same congeners (see the "Congener Abbreviations" worksheets for examples of dioxin and PCB congener naming schemes).

Note that all samples to be imported into the calculator must have the same number of congeners and that only one result should be entered for each congener/sample. Otherwise, an error message will be displayed, and the data transfer routine will be terminated. If multiple results for the same congener are present in the data set, the user should choose the appropriate result and remove the other result(s). An example is for TCDF, which may be confirmed using a second column analysis when it is detected in the initial analysis. In this case, the confirmation sample result should be retained, and the initial result should be discarded. If possible, selection of the correct results should be performed in the database prior to copying the data into this worksheet.

The user should be aware that soil and water samples are often reported within the same laboratory-provided spreadsheet or database output. Since soil and water results have different reporting units, it is best to use different Calculator files for different matrices so that water results will not be confused with soil results (or results from any other matrix). Be sure to enter the matrix and reporting units information at the top of the "Data Entry & Output" worksheet.

After the "Transfer Data" button is pressed, data importation will begin. This importation process may take as long as approximately one minute, depending on the processing speed of the user's computer.

Sample ID (required)	Sample Order (optional)	Congener Name (optional)	CAS Number (required)	Result (required)	Qualifier (required)	Congener Abbreviation (auto-entered)	Congener Order (auto-entered)
SFRA-5	5	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	8.06		TCDD	1
SFRA-5	5	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	0.682	U	PeCDD	2
SFRA-5	5	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.84	J	1,4-HxCDD	3
SFRA-5	5	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	4.24	U	1,6-HxCDD	4
SFRA-5	5	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	3.02	J	1,9-HxCDD	5
SFRA-5	5	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	155		1,4,6-HpCDD	6
SFRA-5	5	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	4960	E	OCDD	7
SFRA-5	5	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.419	J	TCDF	8
SFRA-5	5	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.06	J	1-PeCDF	9
SFRA-5	5	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.15	J	4-PeCDF	10
SFRA-5	5	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.04	J	1,4-HxCDF	11
SFRA-5	5	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.965	U	1,6-HxCDF	12
SFRA-5	5	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	0.678	U	1,9-HxCDF	13
SFRA-5	5	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.03	J	4,6-HxCDF	14
SFRA-5	5	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	24.7		1,4,6-HpCDF	15
SFRA-5	5	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.52	J	1,4,9-HpCDF	16
SFRA-5	5	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	61.3		OCDF	17
SFRA-6	6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3.12		TCDD	1
SFRA-6	6	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	0.391	U	PeCDD	2
SFRA-6	6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	0.716	U	1,4-HxCDD	3
SFRA-6	6	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	0.961	J	1,6-HxCDD	4

SFRA-6	6	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.12	J	1,9-HxCDD	5
SFRA-6	6	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	51.1		1,4,6-HpCDD	6
SFRA-6	6	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	1800		OCDD	7
SFRA-6	6	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.349	U	TCDF	8
SFRA-6	6	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.309	U	1-PeCDF	9
SFRA-6	6	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.289	U	4-PeCDF	10
SFRA-6	6	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.23	U	1,4-HxCDF	11
SFRA-6	6	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.214	U	1,6-HxCDF	12
SFRA-6	6	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	0.365	U	1,9-HxCDF	13
SFRA-6	6	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	0.224	U	4,6-HxCDF	14
SFRA-6	6	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.76	J	1,4,6-HpCDF	15
SFRA-6	6	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.281	U	1,4,9-HpCDF	16
SFRA-6	6	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	3.04	J	OCDF	17
SFRA-7	7	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1080		TCDD	1
SFRA-7	7	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.91	U	PeCDD	2
SFRA-7	7	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	7.3	U	1,4-HxCDD	3
SFRA-7	7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	6.13	U	1,6-HxCDD	4
SFRA-7	7	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	6.06	U	1,9-HxCDD	5
SFRA-7	7	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	114		1,4,6-HpCDD	6
SFRA-7	7	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	1870		OCDD	7
SFRA-7	7	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	7.29	J	TCDF	8
SFRA-7	7	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	8.18	J	1-PeCDF	9
SFRA-7	7	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.97	U	4-PeCDF	10
SFRA-7	7	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.13	U	1,4-HxCDF	11
SFRA-7	7	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.89	U	1,6-HxCDF	12
SFRA-7	7	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.71	U	1,9-HxCDF	13
SFRA-7	7	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.43	U	4,6-HxCDF	14
SFRA-7	7	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	20.1	J	1,4,6-HpCDF	15
SFRA-7	7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	11.2	U	1,4,9-HpCDF	16
SFRA-7	7	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	40.7	J	OCDF	17
SFRA-8	8	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	10300		TCDD	1
SFRA-8	8	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	5.7	U	PeCDD	2
SFRA-8	8	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	21.5	J	1,4-HxCDD	3
SFRA-8	8	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	73.2	J	1,6-HxCDD	4
SFRA-8	8	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	24.5	J	1,9-HxCDD	5
SFRA-8	8	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	550		1,4,6-HpCDD	6
SFRA-8	8	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	6300		OCDD	7
SFRA-8	8	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	70.1		TCDF	8
SFRA-8	8	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.92	U	1-PeCDF	9
SFRA-8	8	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.95	J	4-PeCDF	10
SFRA-8	8	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	11.7	U	1,4-HxCDF	11
SFRA-8	8	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.44	J	1,6-HxCDF	12
SFRA-8	8	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	8.36	U	1,9-HxCDF	13
SFRA-8	8	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	10.4	J	4,6-HxCDF	14
SFRA-8	8	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	127	J	1,4,6-HpCDF	15
SFRA-8	8	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	11.3	J	1,4,9-HpCDF	16
SFRA-8	8	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	229	J	OCDF	17
SFRA-9	9	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3580		TCDD	1
SFRA-9	9	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.12	U	PeCDD	2
SFRA-9	9	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.89	U	1,4-HxCDD	3
SFRA-9	9	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	18.3	J	1,6-HxCDD	4
SFRA-9	9	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	6.27	J	1,9-HxCDD	5
SFRA-9	9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	311		1,4,6-HpCDD	6
SFRA-9	9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5580		OCDD	7
SFRA-9	9	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	23.9		TCDF	8

SFRA-9	9	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.33	J	1-PeCDF	9
SFRA-9	9	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.98	U	4-PeCDF	10
SFRA-9	9	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	4.89	J	1,4-HxCDF	11
SFRA-9	9	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.12	U	1,6-HxCDF	12
SFRA-9	9	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.34	U	1,9-HxCDF	13
SFRA-9	9	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.23	U	4,6-HxCDF	14
SFRA-9	9	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	53	J	1,4,6-HpCDF	15
SFRA-9	9	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	9.33	U	1,4,9-HpCDF	16
SFRA-9	9	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	131	J	OCDF	17
SFRA-10	10	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5.46		TCDD	1
SFRA-10	10	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	0.2	U	PeCDD	2
SFRA-10	10	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	0.514	J	1,4-HxCDD	3
SFRA-10	10	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	0.745	J	1,6-HxCDD	4
SFRA-10	10	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	0.902	J	1,9-HxCDD	5
SFRA-10	10	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	52.5		1,4,6-HpCDD	6
SFRA-10	10	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	2230		OCDD	7
SFRA-10	10	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.131	U	TCDF	8
SFRA-10	10	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.0974	U	1-PeCDF	9
SFRA-10	10	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.0937	U	4-PeCDF	10
SFRA-10	10	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.0716	U	1,4-HxCDF	11
SFRA-10	10	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.0731	U	1,6-HxCDF	12
SFRA-10	10	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	0.115	U	1,9-HxCDF	13
SFRA-10	10	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	0.0731	U	4,6-HxCDF	14
SFRA-10	10	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.273	U	1,4,6-HpCDF	15
SFRA-10	10	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.135	U	1,4,9-HpCDF	16
SFRA-10	10	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	0.761	J	OCDF	17
SFRA-11	11	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4940		TCDD	1
SFRA-11	11	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.98	U	PeCDD	2
SFRA-11	11	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	10.3	U	1,4-HxCDD	3
SFRA-11	11	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	20.3	J	1,6-HxCDD	4
SFRA-11	11	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	11.7	U	1,9-HxCDD	5
SFRA-11	11	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	316		1,4,6-HpCDD	6
SFRA-11	11	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	3280		OCDD	7
SFRA-11	11	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	36	J	TCDF	8
SFRA-11	11	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	21.8	U	1-PeCDF	9
SFRA-11	11	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	10.7	U	4-PeCDF	10
SFRA-11	11	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	9.51	U	1,4-HxCDF	11
SFRA-11	11	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	9.34	U	1,6-HxCDF	12
SFRA-11	11	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	14.9	U	1,9-HxCDF	13
SFRA-11	11	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	8.62	U	4,6-HxCDF	14
SFRA-11	11	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	79.7	J	1,4,6-HpCDF	15
SFRA-11	11	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	11.1	U	1,4,9-HpCDF	16
SFRA-11	11	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	125	J	OCDF	17
SFRA-12	12	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1080		TCDD	1
SFRA-12	12	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.16	U	PeCDD	2
SFRA-12	12	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.48	U	1,4-HxCDD	3
SFRA-12	12	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	6.8	J	1,6-HxCDD	4
SFRA-12	12	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	3.75	J	1,9-HxCDD	5
SFRA-12	12	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	163		1,4,6-HpCDD	6
SFRA-12	12	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	4260		OCDD	7
SFRA-12	12	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	7.82	J	TCDF	8
SFRA-12	12	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.32	U	1-PeCDF	9
SFRA-12	12	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.59	U	4-PeCDF	10
SFRA-12	12	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.03	U	1,4-HxCDF	11
SFRA-12	12	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.14	U	1,6-HxCDF	12

SFRA-12	12	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.03	U	1,9-HxCDF	13
SFRA-12	12	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.12	U	4,6-HxCDF	14
SFRA-12	12	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	20.8	J	1,4,6-HpCDF	15
SFRA-12	12	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.16	U	1,4,9-HpCDF	16
SFRA-12	12	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	49.4	J	OCDF	17
SFRA-13	13	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3080		TCDD	1
SFRA-13	13	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	6.1	U	PeCDD	2
SFRA-13	13	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	14.6	U	1,4-HxCDD	3
SFRA-13	13	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	19.1	J	1,6-HxCDD	4
SFRA-13	13	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	15.3	U	1,9-HxCDD	5
SFRA-13	13	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	367		1,4,6-HpCDD	6
SFRA-13	13	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5030		OCDD	7
SFRA-13	13	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	20.7		TCDF	8
SFRA-13	13	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	7.27	J	1-PeCDF	9
SFRA-13	13	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.44	U	4-PeCDF	10
SFRA-13	13	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5.03	U	1,4-HxCDF	11
SFRA-13	13	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.01	U	1,6-HxCDF	12
SFRA-13	13	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	8	U	1,9-HxCDF	13
SFRA-13	13	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	5.19	U	4,6-HxCDF	14
SFRA-13	13	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	66.3		1,4,6-HpCDF	15
SFRA-13	13	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	11.3	U	1,4,9-HpCDF	16
SFRA-13	13	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	213		OCDF	17
SFRA-14	14	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5670		TCDD	1
SFRA-14	14	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	19.9	U	PeCDD	2
SFRA-14	14	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	25.9	U	1,4-HxCDD	3
SFRA-14	14	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	24.8	U	1,6-HxCDD	4
SFRA-14	14	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	25.9	U	1,9-HxCDD	5
SFRA-14	14	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	216	J	1,4,6-HpCDD	6
SFRA-14	14	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	2800		OCDD	7
SFRA-14	14	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	34.9	J	TCDF	8
SFRA-14	14	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	14.5	U	1-PeCDF	9
SFRA-14	14	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	10.6	U	4-PeCDF	10
SFRA-14	14	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	13.4	U	1,4-HxCDF	11
SFRA-14	14	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	11.9	U	1,6-HxCDF	12
SFRA-14	14	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	23.8	U	1,9-HxCDF	13
SFRA-14	14	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	14.3	U	4,6-HxCDF	14
SFRA-14	14	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	53.4	J	1,4,6-HpCDF	15
SFRA-14	14	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	35.2	U	1,4,9-HpCDF	16
SFRA-14	14	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	90.6	J	OCDF	17
SFRA-15	15	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	17400		TCDD	1
SFRA-15	15	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	23.5	U	PeCDD	2
SFRA-15	15	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	31.1	U	1,4-HxCDD	3
SFRA-15	15	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	150	J	1,6-HxCDD	4
SFRA-15	15	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	49.1	J	1,9-HxCDD	5
SFRA-15	15	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1100		1,4,6-HpCDD	6
SFRA-15	15	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7790		OCDD	7
SFRA-15	15	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	106	J	TCDF	8
SFRA-15	15	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	20	U	1-PeCDF	9
SFRA-15	15	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	21.2	U	4-PeCDF	10
SFRA-15	15	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	19	U	1,4-HxCDF	11
SFRA-15	15	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	17.7	U	1,6-HxCDF	12
SFRA-15	15	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	24.2	U	1,9-HxCDF	13
SFRA-15	15	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	20.2	J	4,6-HxCDF	14
SFRA-15	15	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	235	J	1,4,6-HpCDF	15
SFRA-15	15	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	52.9	U	1,4,9-HpCDF	16

SFRA-15	15	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	375	J	OCDF	17
SFRA-16	16	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3710		TCDD	1
SFRA-16	16	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.54	U	PeCDD	2
SFRA-16	16	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	11	U	1,4-HxCDD	3
SFRA-16	16	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	15	J	1,6-HxCDD	4
SFRA-16	16	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	11.5	U	1,9-HxCDD	5
SFRA-16	16	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	219		1,4,6-HpCDD	6
SFRA-16	16	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	4430		OCDD	7
SFRA-16	16	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	24.3		TCDF	8
SFRA-16	16	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.67	J	1-PeCDF	9
SFRA-16	16	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.56	U	4-PeCDF	10
SFRA-16	16	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	4.31	J	1,4-HxCDF	11
SFRA-16	16	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.7	U	1,6-HxCDF	12
SFRA-16	16	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	3.88	U	1,9-HxCDF	13
SFRA-16	16	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.16	J	4,6-HxCDF	14
SFRA-16	16	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	44.1	J	1,4,6-HpCDF	15
SFRA-16	16	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	9.25	U	1,4,9-HpCDF	16
SFRA-16	16	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	77.8	J	OCDF	17
SFRA-17	17	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4.46	U	TCDD	1
SFRA-17	17	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.98	U	PeCDD	2
SFRA-17	17	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.51	U	1,4-HxCDD	3
SFRA-17	17	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	4.75	U	1,6-HxCDD	4
SFRA-17	17	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.77	U	1,9-HxCDD	5
SFRA-17	17	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	60.6		1,4,6-HpCDD	6
SFRA-17	17	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	2810		OCDD	7
SFRA-17	17	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.91	U	TCDF	8
SFRA-17	17	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.01	U	1-PeCDF	9
SFRA-17	17	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.04	U	4-PeCDF	10
SFRA-17	17	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.23	U	1,4-HxCDF	11
SFRA-17	17	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.14	U	1,6-HxCDF	12
SFRA-17	17	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.9	U	1,9-HxCDF	13
SFRA-17	17	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.27	U	4,6-HxCDF	14
SFRA-17	17	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	4.84	U	1,4,6-HpCDF	15
SFRA-17	17	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.67	U	1,4,9-HpCDF	16
SFRA-17	17	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	7.84	U	OCDF	17
SFRA-18	18	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4830		TCDD	1
SFRA-18	18	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	5.97	U	PeCDD	2
SFRA-18	18	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	13	U	1,4-HxCDD	3
SFRA-18	18	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	15.7	J	1,6-HxCDD	4
SFRA-18	18	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	12.9	U	1,9-HxCDD	5
SFRA-18	18	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	286		1,4,6-HpCDD	6
SFRA-18	18	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	2890		OCDD	7
SFRA-18	18	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	40.1		TCDF	8
SFRA-18	18	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	18.1	J	1-PeCDF	9
SFRA-18	18	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	8.79	U	4-PeCDF	10
SFRA-18	18	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	8.68	U	1,4-HxCDF	11
SFRA-18	18	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.97	U	1,6-HxCDF	12
SFRA-18	18	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	13.3	U	1,9-HxCDF	13
SFRA-18	18	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	8.92	U	4,6-HxCDF	14
SFRA-18	18	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	71.5	J	1,4,6-HpCDF	15
SFRA-18	18	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	16.9	U	1,4,9-HpCDF	16
SFRA-18	18	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	145	J	OCDF	17
SFRA-19	19	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4540		TCDD	1
SFRA-19	19	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	5.62	U	PeCDD	2
SFRA-19	19	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	8.73	U	1,4-HxCDD	3

SFRA-19	19	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	20.7	J	1,6-HxCDD	4
SFRA-19	19	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	9.12	U	1,9-HxCDD	5
SFRA-19	19	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	396		1,4,6-HpCDD	6
SFRA-19	19	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5800		OCDD	7
SFRA-19	19	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	38.6		TCDF	8
SFRA-19	19	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	10.8	J	1-PeCDF	9
SFRA-19	19	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.25	U	4-PeCDF	10
SFRA-19	19	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.9	J	1,4-HxCDF	11
SFRA-19	19	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.6	U	1,6-HxCDF	12
SFRA-19	19	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	7.88	U	1,9-HxCDF	13
SFRA-19	19	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	5.34	J	4,6-HxCDF	14
SFRA-19	19	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	77.6	J	1,4,6-HpCDF	15
SFRA-19	19	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	12.2	U	1,4,9-HpCDF	16
SFRA-19	19	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	215	J	OCDF	17
SFRA-20	20	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5830		TCDD	1
SFRA-20	20	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	8.79	J	PeCDD	2
SFRA-20	20	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	26.9	J	1,4-HxCDD	3
SFRA-20	20	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	40.9	J	1,6-HxCDD	4
SFRA-20	20	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	20.9	J	1,9-HxCDD	5
SFRA-20	20	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	708		1,4,6-HpCDD	6
SFRA-20	20	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8980		OCDD	7
SFRA-20	20	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	42.5		TCDF	8
SFRA-20	20	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	46	J	1-PeCDF	9
SFRA-20	20	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.5	J	4-PeCDF	10
SFRA-20	20	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	17.3	J	1,4-HxCDF	11
SFRA-20	20	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	10.2	J	1,6-HxCDF	12
SFRA-20	20	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	6.43	U	1,9-HxCDF	13
SFRA-20	20	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	10.6	J	4,6-HxCDF	14
SFRA-20	20	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	158		1,4,6-HpCDF	15
SFRA-20	20	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	13.2	J	1,4,9-HpCDF	16
SFRA-20	20	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	430		OCDF	17
SFRA-21	21	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1500		TCDD	1
SFRA-21	21	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.96	U	PeCDD	2
SFRA-21	21	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.57	U	1,4-HxCDD	3
SFRA-21	21	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	9.98	J	1,6-HxCDD	4
SFRA-21	21	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.78	J	1,9-HxCDD	5
SFRA-21	21	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	202		1,4,6-HpCDD	6
SFRA-21	21	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5260		OCDD	7
SFRA-21	21	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9.15	J	TCDF	8
SFRA-21	21	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.39	U	1-PeCDF	9
SFRA-21	21	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.61	U	4-PeCDF	10
SFRA-21	21	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.06	J	1,4-HxCDF	11
SFRA-21	21	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.27	U	1,6-HxCDF	12
SFRA-21	21	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.57	U	1,9-HxCDF	13
SFRA-21	21	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.59	J	4,6-HxCDF	14
SFRA-21	21	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	32.5	J	1,4,6-HpCDF	15
SFRA-21	21	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.08	J	1,4,9-HpCDF	16
SFRA-21	21	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	67	J	OCDF	17
SFRA-22	22	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	218		TCDD	1
SFRA-22	22	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.12	U	PeCDD	2
SFRA-22	22	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	11.3	J	1,4-HxCDD	3
SFRA-22	22	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	84.5		1,6-HxCDD	4
SFRA-22	22	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	18.2	J	1,9-HxCDD	5
SFRA-22	22	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	4020		1,4,6-HpCDD	6
SFRA-22	22	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	45100		OCDD	7

SFRA-22	22	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.36	U	TCDF	8
SFRA-22	22	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	11.3	J	1-PeCDF	9
SFRA-22	22	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.68	U	4-PeCDF	10
SFRA-22	22	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	16.7	J	1,4-HxCDF	11
SFRA-22	22	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.19	U	1,6-HxCDF	12
SFRA-22	22	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	7.4	U	1,9-HxCDF	13
SFRA-22	22	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	9.35	J	4,6-HxCDF	14
SFRA-22	22	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	624		1,4,6-HpCDF	15
SFRA-22	22	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	67.6		1,4,9-HpCDF	16
SFRA-22	22	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	4870		OCDF	17
SFRA-23	23	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4710		TCDD	1
SFRA-23	23	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.29	J	PeCDD	2
SFRA-23	23	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.63	J	1,4-HxCDD	3
SFRA-23	23	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	59.7	JQ	1,6-HxCDD	4
SFRA-23	23	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	23.3	JQ	1,9-HxCDD	5
SFRA-23	23	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	547		1,4,6-HpCDD	6
SFRA-23	23	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7320		OCDD	7
SFRA-23	23	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	23.4		TCDF	8
SFRA-23	23	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.38	J	1-PeCDF	9
SFRA-23	23	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.4	J	4-PeCDF	10
SFRA-23	23	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.26	J	1,4-HxCDF	11
SFRA-23	23	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.64	J	1,6-HxCDF	12
SFRA-23	23	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	6.5	U	1,9-HxCDF	13
SFRA-23	23	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	7.27	J	4,6-HxCDF	14
SFRA-23	23	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	97		1,4,6-HpCDF	15
SFRA-23	23	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.9	J	1,4,9-HpCDF	16
SFRA-23	23	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	237		OCDF	17
SFRA-24	24	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	416		TCDD	1
SFRA-24	24	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.45	U	PeCDD	2
SFRA-24	24	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.09	J	1,4-HxCDD	3
SFRA-24	24	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	7.54	J	1,6-HxCDD	4
SFRA-24	24	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.77	J	1,9-HxCDD	5
SFRA-24	24	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	308		1,4,6-HpCDD	6
SFRA-24	24	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7700		OCDD	7
SFRA-24	24	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.59	J	TCDF	8
SFRA-24	24	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.23	J	1-PeCDF	9
SFRA-24	24	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.84	U	4-PeCDF	10
SFRA-24	24	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.26	U	1,4-HxCDF	11
SFRA-24	24	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.41	U	1,6-HxCDF	12
SFRA-24	24	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.97	U	1,9-HxCDF	13
SFRA-24	24	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.59	J	4,6-HxCDF	14
SFRA-24	24	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	45.9	J	1,4,6-HpCDF	15
SFRA-24	24	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.97	J	1,4,9-HpCDF	16
SFRA-24	24	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	231		OCDF	17
SFRA-26	26	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	530		TCDD	1
SFRA-26	26	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.5	U	PeCDD	2
SFRA-26	26	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	24.5	J	1,4-HxCDD	3
SFRA-26	26	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	123		1,6-HxCDD	4
SFRA-26	26	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	48	J	1,9-HxCDD	5
SFRA-26	26	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	2930		1,4,6-HpCDD	6
SFRA-26	26	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	20100		OCDD	7
SFRA-26	26	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.45	J	TCDF	8
SFRA-26	26	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.2	J	1-PeCDF	9
SFRA-26	26	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.74	J	4-PeCDF	10
SFRA-26	26	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	23.2	J	1,4-HxCDF	11

SFRA-26	26	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	9.71	J	1,6-HxCDF	12
SFRA-26	26	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	9.21	U	1,9-HxCDF	13
SFRA-26	26	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	14.5	J	4,6-HxCDF	14
SFRA-26	26	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	284		1,4,6-HpCDF	15
SFRA-26	26	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	26.8	J	1,4,9-HpCDF	16
SFRA-26	26	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	549		OCDF	17
SFRA-27	27	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	161		TCDD	1
SFRA-27	27	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.93	U	PeCDD	2
SFRA-27	27	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	6.62	J	1,4-HxCDD	3
SFRA-27	27	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	35.2	J	1,6-HxCDD	4
SFRA-27	27	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	14.9	J	1,9-HxCDD	5
SFRA-27	27	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	920		1,4,6-HpCDD	6
SFRA-27	27	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11200		OCDD	7
SFRA-27	27	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.38	U	TCDF	8
SFRA-27	27	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.05	U	1-PeCDF	9
SFRA-27	27	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.03	U	4-PeCDF	10
SFRA-27	27	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	9.19	J	1,4-HxCDF	11
SFRA-27	27	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.63	J	1,6-HxCDF	12
SFRA-27	27	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.51	U	1,9-HxCDF	13
SFRA-27	27	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	7.71	J	4,6-HxCDF	14
SFRA-27	27	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	163		1,4,6-HpCDF	15
SFRA-27	27	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	15.2	J	1,4,9-HpCDF	16
SFRA-27	27	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	611		OCDF	17
SFRA-28	28	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1220		TCDD	1
SFRA-28	28	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.51	U	PeCDD	2
SFRA-28	28	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.66	U	1,4-HxCDD	3
SFRA-28	28	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	7.96	U	1,6-HxCDD	4
SFRA-28	28	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.48	J	1,9-HxCDD	5
SFRA-28	28	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	147		1,4,6-HpCDD	6
SFRA-28	28	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	3870		OCDD	7
SFRA-28	28	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	11.2	J	TCDF	8
SFRA-28	28	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	21	J	1-PeCDF	9
SFRA-28	28	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.72	U	4-PeCDF	10
SFRA-28	28	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	7.98	U	1,4-HxCDF	11
SFRA-28	28	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.6	U	1,6-HxCDF	12
SFRA-28	28	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.34	U	1,9-HxCDF	13
SFRA-28	28	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.07	J	4,6-HxCDF	14
SFRA-28	28	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	28.4	J	1,4,6-HpCDF	15
SFRA-28	28	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.3	J	1,4,9-HpCDF	16
SFRA-28	28	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	69.2	J	OCDF	17
SFRA-29	29	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	7.92	J	TCDD	1
SFRA-29	29	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.47	U	PeCDD	2
SFRA-29	29	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.38	U	1,4-HxCDD	3
SFRA-29	29	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	2.7	J	1,6-HxCDD	4
SFRA-29	29	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2.63	U	1,9-HxCDD	5
SFRA-29	29	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	149		1,4,6-HpCDD	6
SFRA-29	29	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8210		OCDD	7
SFRA-29	29	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.21	U	TCDF	8
SFRA-29	29	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.08	U	1-PeCDF	9
SFRA-29	29	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.842	U	4-PeCDF	10
SFRA-29	29	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.16	U	1,4-HxCDF	11
SFRA-29	29	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.11	U	1,6-HxCDF	12
SFRA-29	29	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.95	U	1,9-HxCDF	13
SFRA-29	29	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.22	U	4,6-HxCDF	14
SFRA-29	29	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	5.96	J	1,4,6-HpCDF	15

SFRA-29	29	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.579	U	1,4,9-HpCDF	16
SFRA-29	29	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	22.4	J	OCDF	17
SFRA-30	30	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	11000		TCDD	1
SFRA-30	30	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	42.3	U	PeCDD	2
SFRA-30	30	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	61.3	U	1,4-HxCDD	3
SFRA-30	30	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	268	J	1,6-HxCDD	4
SFRA-30	30	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	90.2	J	1,9-HxCDD	5
SFRA-30	30	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	2040		1,4,6-HpCDD	6
SFRA-30	30	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	16500		OCDD	7
SFRA-30	30	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	74.5	J	TCDF	8
SFRA-30	30	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	31.9	J	1-PeCDF	9
SFRA-30	30	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	26.6	U	4-PeCDF	10
SFRA-30	30	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	54.6	U	1,4-HxCDF	11
SFRA-30	30	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	47.1	U	1,6-HxCDF	12
SFRA-30	30	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	88.5	U	1,9-HxCDF	13
SFRA-30	30	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	45.9	J	4,6-HxCDF	14
SFRA-30	30	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	537	J	1,4,6-HpCDF	15
SFRA-30	30	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	68.9	J	1,4,9-HpCDF	16
SFRA-30	30	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	1150	J	OCDF	17
SFRA-31	31	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	20300		TCDD	1
SFRA-31	31	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	32.4	U	PeCDD	2
SFRA-31	31	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	36.5	J	1,4-HxCDD	3
SFRA-31	31	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	190	J	1,6-HxCDD	4
SFRA-31	31	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	62	J	1,9-HxCDD	5
SFRA-31	31	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1560		1,4,6-HpCDD	6
SFRA-31	31	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13900		OCDD	7
SFRA-31	31	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	101	J	TCDF	8
SFRA-31	31	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	11.2	U	1-PeCDF	9
SFRA-31	31	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	17.5	J	4-PeCDF	10
SFRA-31	31	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	44.3	J	1,4-HxCDF	11
SFRA-31	31	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	28.3	J	1,6-HxCDF	12
SFRA-31	31	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	22.5	U	1,9-HxCDF	13
SFRA-31	31	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	36.5	J	4,6-HxCDF	14
SFRA-31	31	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	645	J	1,4,6-HpCDF	15
SFRA-31	31	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	31.9	U	1,4,9-HpCDF	16
SFRA-31	31	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	501	J	OCDF	17
SFRA-32	32	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3190		TCDD	1
SFRA-32	32	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	5.04	U	PeCDD	2
SFRA-32	32	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	12.5	J	1,4-HxCDD	3
SFRA-32	32	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	29.7	J	1,6-HxCDD	4
SFRA-32	32	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	12.5	J	1,9-HxCDD	5
SFRA-32	32	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	510		1,4,6-HpCDD	6
SFRA-32	32	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	10900		OCDD	7
SFRA-32	32	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	22.5		TCDF	8
SFRA-32	32	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	17.8	J	1-PeCDF	9
SFRA-32	32	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.03	U	4-PeCDF	10
SFRA-32	32	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	11.2	U	1,4-HxCDF	11
SFRA-32	32	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.2	J	1,6-HxCDF	12
SFRA-32	32	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.91	U	1,9-HxCDF	13
SFRA-32	32	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	6.98	U	4,6-HxCDF	14
SFRA-32	32	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	92.9		1,4,6-HpCDF	15
SFRA-32	32	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	8.49	J	1,4,9-HpCDF	16
SFRA-32	32	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	137		OCDF	17
SFRA-33	33	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	24400		TCDD	1
SFRA-33	33	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	16.4	U	PeCDD	2

SFRA-33	33	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	52.7	U	1,4-HxCDD	3
SFRA-33	33	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	49.3	U	1,6-HxCDD	4
SFRA-33	33	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	53.8	U	1,9-HxCDD	5
SFRA-33	33	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	704		1,4,6-HpCDD	6
SFRA-33	33	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	10700		OCDD	7
SFRA-33	33	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	154		TCDF	8
SFRA-33	33	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	14.6	U	1-PeCDF	9
SFRA-33	33	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	14	U	4-PeCDF	10
SFRA-33	33	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	24.5	U	1,4-HxCDF	11
SFRA-33	33	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	24.5	U	1,6-HxCDF	12
SFRA-33	33	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	47	U	1,9-HxCDF	13
SFRA-33	33	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	27.9	U	4,6-HxCDF	14
SFRA-33	33	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	158	J	1,4,6-HpCDF	15
SFRA-33	33	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	22.5	U	1,4,9-HpCDF	16
SFRA-33	33	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	220	J	OCDF	17
SFRA-37	37	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	6680		TCDD	1
SFRA-37	37	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	7.84	U	PeCDD	2
SFRA-37	37	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	15	U	1,4-HxCDD	3
SFRA-37	37	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	30.6	J	1,6-HxCDD	4
SFRA-37	37	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	17.4	J	1,9-HxCDD	5
SFRA-37	37	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	754		1,4,6-HpCDD	6
SFRA-37	37	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11900		OCDD	7
SFRA-37	37	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	35.4	J	TCDF	8
SFRA-37	37	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.73	U	1-PeCDF	9
SFRA-37	37	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.02	U	4-PeCDF	10
SFRA-37	37	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	14	U	1,4-HxCDF	11
SFRA-37	37	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.77	U	1,6-HxCDF	12
SFRA-37	37	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	12	U	1,9-HxCDF	13
SFRA-37	37	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	11	J	4,6-HxCDF	14
SFRA-37	37	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	110	J	1,4,6-HpCDF	15
SFRA-37	37	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	5.93	J	1,4,9-HpCDF	16
SFRA-37	37	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	175	J	OCDF	17
SFRA-38	38	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2560		TCDD	1
SFRA-38	38	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.21	U	PeCDD	2
SFRA-38	38	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.13	J	1,4-HxCDD	3
SFRA-38	38	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	21.6	J	1,6-HxCDD	4
SFRA-38	38	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	10.7	J	1,9-HxCDD	5
SFRA-38	38	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	382		1,4,6-HpCDD	6
SFRA-38	38	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	9700		OCDD	7
SFRA-38	38	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	15.2		TCDF	8
SFRA-38	38	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.43	J	1-PeCDF	9
SFRA-38	38	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.99	J	4-PeCDF	10
SFRA-38	38	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.29	J	1,4-HxCDF	11
SFRA-38	38	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.27	J	1,6-HxCDF	12
SFRA-38	38	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.92	U	1,9-HxCDF	13
SFRA-38	38	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.36	J	4,6-HxCDF	14
SFRA-38	38	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	63.7		1,4,6-HpCDF	15
SFRA-38	38	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	5.13	J	1,4,9-HpCDF	16
SFRA-38	38	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	97	J	OCDF	17
SFRA-39	39	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3200		TCDD	1
SFRA-39	39	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.57	U	PeCDD	2
SFRA-39	39	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.59	J	1,4-HxCDD	3
SFRA-39	39	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	27.9	J	1,6-HxCDD	4
SFRA-39	39	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	10.4	J	1,9-HxCDD	5
SFRA-39	39	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	482		1,4,6-HpCDD	6

SFRA-39	39	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11300		OCDD	7
SFRA-39	39	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	27.8		TCDF	8
SFRA-39	39	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.17	J	1-PeCDF	9
SFRA-39	39	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.33	J	4-PeCDF	10
SFRA-39	39	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	9.58	J	1,4-HxCDF	11
SFRA-39	39	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.52	U	1,6-HxCDF	12
SFRA-39	39	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.99	U	1,9-HxCDF	13
SFRA-39	39	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	5.82	U	4,6-HxCDF	14
SFRA-39	39	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	79.1		1,4,6-HpCDF	15
SFRA-39	39	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	5.65	U	1,4,9-HpCDF	16
SFRA-39	39	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	121	J	OCDF	17
SFRA-40	40	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	163		TCDD	1
SFRA-40	40	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.72	U	PeCDD	2
SFRA-40	40	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	56.3	J	1,4-HxCDD	3
SFRA-40	40	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	87.8		1,6-HxCDD	4
SFRA-40	40	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	23.5	J	1,9-HxCDD	5
SFRA-40	40	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1880		1,4,6-HpCDD	6
SFRA-40	40	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	21500		OCDD	7
SFRA-40	40	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.93	J	TCDF	8
SFRA-40	40	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.06	U	1-PeCDF	9
SFRA-40	40	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	7.39	J	4-PeCDF	10
SFRA-40	40	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	24.9	J	1,4-HxCDF	11
SFRA-40	40	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	8.46	U	1,6-HxCDF	12
SFRA-40	40	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	8.13	U	1,9-HxCDF	13
SFRA-40	40	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	17.1	J	4,6-HxCDF	14
SFRA-40	40	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	269		1,4,6-HpCDF	15
SFRA-40	40	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	29.5	J	1,4,9-HpCDF	16
SFRA-40	40	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	624		OCDF	17
SFRA-41	41	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	13300		TCDD	1
SFRA-41	41	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	13.1	U	PeCDD	2
SFRA-41	41	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	23.7	J	1,4-HxCDD	3
SFRA-41	41	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	88.5	J	1,6-HxCDD	4
SFRA-41	41	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	28.5	J	1,9-HxCDD	5
SFRA-41	41	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1280		1,4,6-HpCDD	6
SFRA-41	41	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14500		OCDD	7
SFRA-41	41	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	69.1	J	TCDF	8
SFRA-41	41	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	9.26	U	1-PeCDF	9
SFRA-41	41	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	8.83	U	4-PeCDF	10
SFRA-41	41	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	44.7	J	1,4-HxCDF	11
SFRA-41	41	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	16.9	J	1,6-HxCDF	12
SFRA-41	41	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	16.2	U	1,9-HxCDF	13
SFRA-41	41	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	21.4	J	4,6-HxCDF	14
SFRA-41	41	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	376	J	1,4,6-HpCDF	15
SFRA-41	41	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	40.5	J	1,4,9-HpCDF	16
SFRA-41	41	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	567	J	OCDF	17
SFRA-42	42	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	6160		TCDD	1
SFRA-42	42	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	13.3	U	PeCDD	2
SFRA-42	42	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	24.2	U	1,4-HxCDD	3
SFRA-42	42	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	40.5	J	1,6-HxCDD	4
SFRA-42	42	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	26.7	U	1,9-HxCDD	5
SFRA-42	42	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	766		1,4,6-HpCDD	6
SFRA-42	42	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13900		OCDD	7
SFRA-42	42	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	33.6	J	TCDF	8
SFRA-42	42	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	12.7	U	1-PeCDF	9
SFRA-42	42	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	13.2	U	4-PeCDF	10

SFRA-42	42	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	20.9	J	1,4-HxCDF	11
SFRA-42	42	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	9.64	U	1,6-HxCDF	12
SFRA-42	42	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	20.1	U	1,9-HxCDF	13
SFRA-42	42	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	14.6	J	4,6-HxCDF	14
SFRA-42	42	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	140	J	1,4,6-HpCDF	15
SFRA-42	42	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	19.2	U	1,4,9-HpCDF	16
SFRA-42	42	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	226	J	OCDF	17
SFRA-43	43	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	20700		TCDD	1
SFRA-43	43	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	20.5	U	PeCDD	2
SFRA-43	43	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	31.6	J	1,4-HxCDD	3
SFRA-43	43	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	57.2	J	1,6-HxCDD	4
SFRA-43	43	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	29.7	U	1,9-HxCDD	5
SFRA-43	43	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	952		1,4,6-HpCDD	6
SFRA-43	43	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13400		OCDD	7
SFRA-43	43	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	94	J	TCDF	8
SFRA-43	43	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	17	U	1-PeCDF	9
SFRA-43	43	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	16.3	U	4-PeCDF	10
SFRA-43	43	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	29.1	J	1,4-HxCDF	11
SFRA-43	43	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	21.8	U	1,6-HxCDF	12
SFRA-43	43	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	36.8	U	1,9-HxCDF	13
SFRA-43	43	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	21.5	U	4,6-HxCDF	14
SFRA-43	43	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	244	J	1,4,6-HpCDF	15
SFRA-43	43	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	36.6	U	1,4,9-HpCDF	16
SFRA-43	43	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	301	J	OCDF	17
SFRA-44	44	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	14000		TCDD	1
SFRA-44	44	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	13.2	U	PeCDD	2
SFRA-44	44	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	31.2	J	1,4-HxCDD	3
SFRA-44	44	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	233	J	1,6-HxCDD	4
SFRA-44	44	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	72.1	J	1,9-HxCDD	5
SFRA-44	44	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	2160		1,4,6-HpCDD	6
SFRA-44	44	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	15500		OCDD	7
SFRA-44	44	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	86.4	J	TCDF	8
SFRA-44	44	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	9.89	U	1-PeCDF	9
SFRA-44	44	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	12	J	4-PeCDF	10
SFRA-44	44	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	53.2	J	1,4-HxCDF	11
SFRA-44	44	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	22.6	U	1,6-HxCDF	12
SFRA-44	44	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	26.4	U	1,9-HxCDF	13
SFRA-44	44	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	37.4	J	4,6-HxCDF	14
SFRA-44	44	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	736		1,4,6-HpCDF	15
SFRA-44	44	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	38.3	U	1,4,9-HpCDF	16
SFRA-44	44	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	661	J	OCDF	17
SFRA-45	45	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	10600		TCDD	1
SFRA-45	45	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	15.3	U	PeCDD	2
SFRA-45	45	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	28.4	U	1,4-HxCDD	3
SFRA-45	45	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	40.2	J	1,6-HxCDD	4
SFRA-45	45	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	30.1	U	1,9-HxCDD	5
SFRA-45	45	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	605		1,4,6-HpCDD	6
SFRA-45	45	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11800		OCDD	7
SFRA-45	45	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	56.6	J	TCDF	8
SFRA-45	45	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	12.6	U	1-PeCDF	9
SFRA-45	45	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	11.8	U	4-PeCDF	10
SFRA-45	45	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	16.6	U	1,4-HxCDF	11
SFRA-45	45	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	16.6	U	1,6-HxCDF	12
SFRA-45	45	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	32.5	U	1,9-HxCDF	13
SFRA-45	45	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	17.4	U	4,6-HxCDF	14

SFRA-45	45	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	158	J	1,4,6-HpCDF	15
SFRA-45	45	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	37.9	U	1,4,9-HpCDF	16
SFRA-45	45	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	209	J	OCDF	17
SFRA-46	46	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	30700		TCDD	1
SFRA-46	46	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	17.2	U	PeCDD	2
SFRA-46	46	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	77.3	U	1,4-HxCDD	3
SFRA-46	46	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	100	J	1,6-HxCDD	4
SFRA-46	46	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	79	U	1,9-HxCDD	5
SFRA-46	46	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1060		1,4,6-HpCDD	6
SFRA-46	46	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13000		OCDD	7
SFRA-46	46	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	137	J	TCDF	8
SFRA-46	46	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	13.3	U	1-PeCDF	9
SFRA-46	46	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	13.2	U	4-PeCDF	10
SFRA-46	46	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	30.4	J	1,4-HxCDF	11
SFRA-46	46	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	17.6	U	1,6-HxCDF	12
SFRA-46	46	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	28.1	U	1,9-HxCDF	13
SFRA-46	46	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	22	U	4,6-HxCDF	14
SFRA-46	46	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	426	J	1,4,6-HpCDF	15
SFRA-46	46	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	26	U	1,4,9-HpCDF	16
SFRA-46	46	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	559	J	OCDF	17
SFRA-47	47	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4310		TCDD	1
SFRA-47	47	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.89	U	PeCDD	2
SFRA-47	47	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.93	U	1,4-HxCDD	3
SFRA-47	47	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	6.06	U	1,6-HxCDD	4
SFRA-47	47	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	6.36	U	1,9-HxCDD	5
SFRA-47	47	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	153		1,4,6-HpCDD	6
SFRA-47	47	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7910		OCDD	7
SFRA-47	47	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	19.7	J	TCDF	8
SFRA-47	47	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.77	U	1-PeCDF	9
SFRA-47	47	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.69	U	4-PeCDF	10
SFRA-47	47	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.31	U	1,4-HxCDF	11
SFRA-47	47	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.18	U	1,6-HxCDF	12
SFRA-47	47	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	3.81	U	1,9-HxCDF	13
SFRA-47	47	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	2.35	U	4,6-HxCDF	14
SFRA-47	47	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	16.9	J	1,4,6-HpCDF	15
SFRA-47	47	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.08	U	1,4,9-HpCDF	16
SFRA-47	47	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	28.9	J	OCDF	17
SFRA-48	48	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	7320		TCDD	1
SFRA-48	48	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	8.22	U	PeCDD	2
SFRA-48	48	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	16.2	U	1,4-HxCDD	3
SFRA-48	48	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	27.3	U	1,6-HxCDD	4
SFRA-48	48	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	16.2	U	1,9-HxCDD	5
SFRA-48	48	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	408		1,4,6-HpCDD	6
SFRA-48	48	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	9930		OCDD	7
SFRA-48	48	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	51.6	J	TCDF	8
SFRA-48	48	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.83	U	1-PeCDF	9
SFRA-48	48	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.85	U	4-PeCDF	10
SFRA-48	48	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	10.8	U	1,4-HxCDF	11
SFRA-48	48	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	10.5	U	1,6-HxCDF	12
SFRA-48	48	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	20.2	U	1,9-HxCDF	13
SFRA-48	48	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	11	U	4,6-HxCDF	14
SFRA-48	48	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	101	J	1,4,6-HpCDF	15
SFRA-48	48	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	15.3	U	1,4,9-HpCDF	16
SFRA-48	48	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	101	J	OCDF	17
SFRA-49	49	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1410		TCDD	1

SFRA-49	49	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.78	U	PeCDD	2
SFRA-49	49	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	7.61	J	1,4-HxCDD	3
SFRA-49	49	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	11.5	J	1,6-HxCDD	4
SFRA-49	49	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.39	J	1,9-HxCDD	5
SFRA-49	49	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	270		1,4,6-HpCDD	6
SFRA-49	49	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8070		OCDD	7
SFRA-49	49	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	8.8	J	TCDF	8
SFRA-49	49	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.22	U	1-PeCDF	9
SFRA-49	49	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.02	U	4-PeCDF	10
SFRA-49	49	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5	J	1,4-HxCDF	11
SFRA-49	49	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.84	J	1,6-HxCDF	12
SFRA-49	49	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.31	U	1,9-HxCDF	13
SFRA-49	49	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	2.41	U	4,6-HxCDF	14
SFRA-49	49	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	43.1	J	1,4,6-HpCDF	15
SFRA-49	49	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.41	J	1,4,9-HpCDF	16
SFRA-49	49	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	75.9	J	OCDF	17
SFRA-50	50	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2650		TCDD	1
SFRA-50	50	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.51	U	PeCDD	2
SFRA-50	50	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	17.8	J	1,4-HxCDD	3
SFRA-50	50	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	57.7		1,6-HxCDD	4
SFRA-50	50	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	17.9	J	1,9-HxCDD	5
SFRA-50	50	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	642		1,4,6-HpCDD	6
SFRA-50	50	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12100		OCDD	7
SFRA-50	50	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	19.1		TCDF	8
SFRA-50	50	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	14.9	J	1-PeCDF	9
SFRA-50	50	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.21	J	4-PeCDF	10
SFRA-50	50	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	13.1	J	1,4-HxCDF	11
SFRA-50	50	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.45	J	1,6-HxCDF	12
SFRA-50	50	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.93	U	1,9-HxCDF	13
SFRA-50	50	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	7.39	J	4,6-HxCDF	14
SFRA-50	50	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	106		1,4,6-HpCDF	15
SFRA-50	50	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	9.14	J	1,4,9-HpCDF	16
SFRA-50	50	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	190		OCDF	17
SFRA-51	51	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4380		TCDD	1
SFRA-51	51	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	7.73	U	PeCDD	2
SFRA-51	51	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	15.6	J	1,4-HxCDD	3
SFRA-51	51	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	29.3	J	1,6-HxCDD	4
SFRA-51	51	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	13.2	U	1,9-HxCDD	5
SFRA-51	51	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	533		1,4,6-HpCDD	6
SFRA-51	51	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12500		OCDD	7
SFRA-51	51	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	26.2	J	TCDF	8
SFRA-51	51	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	9.77	U	1-PeCDF	9
SFRA-51	51	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	9.51	U	4-PeCDF	10
SFRA-51	51	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	13.2	U	1,4-HxCDF	11
SFRA-51	51	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.71	U	1,6-HxCDF	12
SFRA-51	51	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	14	U	1,9-HxCDF	13
SFRA-51	51	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	8.01	U	4,6-HxCDF	14
SFRA-51	51	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	96.7	J	1,4,6-HpCDF	15
SFRA-51	51	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	11.5	U	1,4,9-HpCDF	16
SFRA-51	51	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	136	J	OCDF	17
SFRA-52	52	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2400		TCDD	1
SFRA-52	52	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.31	J	PeCDD	2
SFRA-52	52	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.2	J	1,4-HxCDD	3
SFRA-52	52	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	13	J	1,6-HxCDD	4
SFRA-52	52	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	6.06	J	1,9-HxCDD	5

SFRA-52	52	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	262		1,4,6-HpCDD	6
SFRA-52	52	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7840		OCDD	7
SFRA-52	52	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	13.9		TCDF	8
SFRA-52	52	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.39	U	1-PeCDF	9
SFRA-52	52	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.53	J	4-PeCDF	10
SFRA-52	52	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.91	J	1,4-HxCDF	11
SFRA-52	52	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.9	J	1,6-HxCDF	12
SFRA-52	52	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.04	U	1,9-HxCDF	13
SFRA-52	52	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	2.91	J	4,6-HxCDF	14
SFRA-52	52	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	45	J	1,4,6-HpCDF	15
SFRA-52	52	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.89	U	1,4,9-HpCDF	16
SFRA-52	52	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	120	J	OCDF	17
SFRA-53	53	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	42600		TCDD	1
SFRA-53	53	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	26.9	U	PeCDD	2
SFRA-53	53	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	48.4	U	1,4-HxCDD	3
SFRA-53	53	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	45.4	U	1,6-HxCDD	4
SFRA-53	53	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	49.4	U	1,9-HxCDD	5
SFRA-53	53	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	904	J	1,4,6-HpCDD	6
SFRA-53	53	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	15700		OCDD	7
SFRA-53	53	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	186	J	TCDF	8
SFRA-53	53	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	19.4	U	1-PeCDF	9
SFRA-53	53	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	19.2	U	4-PeCDF	10
SFRA-53	53	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	22	U	1,4-HxCDF	11
SFRA-53	53	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	21.5	U	1,6-HxCDF	12
SFRA-53	53	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	42	U	1,9-HxCDF	13
SFRA-53	53	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	24.2	U	4,6-HxCDF	14
SFRA-53	53	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	156	J	1,4,6-HpCDF	15
SFRA-53	53	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	41	U	1,4,9-HpCDF	16
SFRA-53	53	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	581	J	OCDF	17
SFRA-54	54	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	19700		TCDD	1
SFRA-54	54	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	8.16	U	PeCDD	2
SFRA-54	54	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	21.1	U	1,4-HxCDD	3
SFRA-54	54	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	23.3	J	1,6-HxCDD	4
SFRA-54	54	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	21.5	U	1,9-HxCDD	5
SFRA-54	54	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	848		1,4,6-HpCDD	6
SFRA-54	54	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	23700		OCDD	7
SFRA-54	54	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	81.4	J	TCDF	8
SFRA-54	54	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.12	U	1-PeCDF	9
SFRA-54	54	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.87	U	4-PeCDF	10
SFRA-54	54	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.1	U	1,4-HxCDF	11
SFRA-54	54	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.55	U	1,6-HxCDF	12
SFRA-54	54	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	11.1	U	1,9-HxCDF	13
SFRA-54	54	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	6.48	U	4,6-HxCDF	14
SFRA-54	54	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	140	J	1,4,6-HpCDF	15
SFRA-54	54	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	21.6	U	1,4,9-HpCDF	16
SFRA-54	54	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	622	J	OCDF	17
SFRA-55	55	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	13800		TCDD	1
SFRA-55	55	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	16.6	U	PeCDD	2
SFRA-55	55	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	36.7	J	1,4-HxCDD	3
SFRA-55	55	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	150	J	1,6-HxCDD	4
SFRA-55	55	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	54.8	J	1,9-HxCDD	5
SFRA-55	55	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1430		1,4,6-HpCDD	6
SFRA-55	55	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14000		OCDD	7
SFRA-55	55	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	78.6	J	TCDF	8
SFRA-55	55	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	16.1	U	1-PeCDF	9

SFRA-55	55	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	16	U	4-PeCDF	10
SFRA-55	55	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	33.2	U	1,4-HxCDF	11
SFRA-55	55	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	19.3	J	1,6-HxCDF	12
SFRA-55	55	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	37.5	U	1,9-HxCDF	13
SFRA-55	55	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	22.1	U	4,6-HxCDF	14
SFRA-55	55	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	453	J	1,4,6-HpCDF	15
SFRA-55	55	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	38.7	U	1,4,9-HpCDF	16
SFRA-55	55	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	423	J	OCDF	17
SFRA-56	56	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	15600		TCDD	1
SFRA-56	56	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	21.4	J	PeCDD	2
SFRA-56	56	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	25.8	U	1,4-HxCDD	3
SFRA-56	56	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	256	J	1,6-HxCDD	4
SFRA-56	56	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	81.2	J	1,9-HxCDD	5
SFRA-56	56	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	4360		1,4,6-HpCDD	6
SFRA-56	56	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	38000		OCDD	7
SFRA-56	56	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	88.6	J	TCDF	8
SFRA-56	56	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	11.1	U	1-PeCDF	9
SFRA-56	56	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	23.6	U	4-PeCDF	10
SFRA-56	56	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	39.2	J	1,4-HxCDF	11
SFRA-56	56	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	30.6	U	1,6-HxCDF	12
SFRA-56	56	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	36.7	U	1,9-HxCDF	13
SFRA-56	56	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	40.3	J	4,6-HxCDF	14
SFRA-56	56	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	937		1,4,6-HpCDF	15
SFRA-56	56	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	95	J	1,4,9-HpCDF	16
SFRA-56	56	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	3970		OCDF	17
SFRA-57	57	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	344		TCDD	1
SFRA-57	57	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.96	U	PeCDD	2
SFRA-57	57	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.86	J	1,4-HxCDD	3
SFRA-57	57	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	25	U	1,6-HxCDD	4
SFRA-57	57	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	9.11	U	1,9-HxCDD	5
SFRA-57	57	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	705		1,4,6-HpCDD	6
SFRA-57	57	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13400		OCDD	7
SFRA-57	57	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.82	J	TCDF	8
SFRA-57	57	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.49	U	1-PeCDF	9
SFRA-57	57	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.65	U	4-PeCDF	10
SFRA-57	57	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	4.35	J	1,4-HxCDF	11
SFRA-57	57	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.66	U	1,6-HxCDF	12
SFRA-57	57	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	3.66	U	1,9-HxCDF	13
SFRA-57	57	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.02	J	4,6-HxCDF	14
SFRA-57	57	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	148		1,4,6-HpCDF	15
SFRA-57	57	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	11.3	J	1,4,9-HpCDF	16
SFRA-57	57	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	1040		OCDF	17
SFRA-58	58	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	26000		TCDD	1
SFRA-58	58	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	11.8	U	PeCDD	2
SFRA-58	58	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	16.2	U	1,4-HxCDD	3
SFRA-58	58	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	102	J	1,6-HxCDD	4
SFRA-58	58	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	32.7	J	1,9-HxCDD	5
SFRA-58	58	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	901		1,4,6-HpCDD	6
SFRA-58	58	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	10900		OCDD	7
SFRA-58	58	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	132		TCDF	8
SFRA-58	58	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	7.89	U	1-PeCDF	9
SFRA-58	58	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	12.9	U	4-PeCDF	10
SFRA-58	58	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	13.1	U	1,4-HxCDF	11
SFRA-58	58	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	13.3	U	1,6-HxCDF	12
SFRA-58	58	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	18.5	U	1,9-HxCDF	13

SFRA-58	58	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	19.8	J	4,6-HxCDF	14
SFRA-58	58	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	251	J	1,4,6-HpCDF	15
SFRA-58	58	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	21.3	J	1,4,9-HpCDF	16
SFRA-58	58	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	450	J	OCDF	17
SFRA-59	59	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3890		TCDD	1
SFRA-59	59	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.54	J	PeCDD	2
SFRA-59	59	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.05	J	1,4-HxCDD	3
SFRA-59	59	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	28.6	JQ	1,6-HxCDD	4
SFRA-59	59	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	12.2	J	1,9-HxCDD	5
SFRA-59	59	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	392		1,4,6-HpCDD	6
SFRA-59	59	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	9570		OCDD	7
SFRA-59	59	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	21.1		TCDF	8
SFRA-59	59	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.25	J	1-PeCDF	9
SFRA-59	59	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.14	J	4-PeCDF	10
SFRA-59	59	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.53	U	1,4-HxCDF	11
SFRA-59	59	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3	U	1,6-HxCDF	12
SFRA-59	59	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.55	U	1,9-HxCDF	13
SFRA-59	59	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.51	U	4,6-HxCDF	14
SFRA-59	59	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	81.9		1,4,6-HpCDF	15
SFRA-59	59	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	4.97	J	1,4,9-HpCDF	16
SFRA-59	59	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	201		OCDF	17
SFRA-60	60	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5520		TCDD	1
SFRA-60	60	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	6.16	J	PeCDD	2
SFRA-60	60	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	13	U	1,4-HxCDD	3
SFRA-60	60	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	47.1	J	1,6-HxCDD	4
SFRA-60	60	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	13.6	U	1,9-HxCDD	5
SFRA-60	60	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	600		1,4,6-HpCDD	6
SFRA-60	60	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12900		OCDD	7
SFRA-60	60	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	29.4	J	TCDF	8
SFRA-60	60	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.62	U	1-PeCDF	9
SFRA-60	60	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.34	J	4-PeCDF	10
SFRA-60	60	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5.41	U	1,4-HxCDF	11
SFRA-60	60	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.61	U	1,6-HxCDF	12
SFRA-60	60	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	8.56	U	1,9-HxCDF	13
SFRA-60	60	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	5.94	U	4,6-HxCDF	14
SFRA-60	60	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	123	J	1,4,6-HpCDF	15
SFRA-60	60	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	12	J	1,4,9-HpCDF	16
SFRA-60	60	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	386	J	OCDF	17
SFRA-61	61	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2490		TCDD	1
SFRA-61	61	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.22	U	PeCDD	2
SFRA-61	61	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.95	J	1,4-HxCDD	3
SFRA-61	61	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	25.7	J	1,6-HxCDD	4
SFRA-61	61	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	8.9	J	1,9-HxCDD	5
SFRA-61	61	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	387		1,4,6-HpCDD	6
SFRA-61	61	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12200		OCDD	7
SFRA-61	61	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	12.1	J	TCDF	8
SFRA-61	61	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.881	U	1-PeCDF	9
SFRA-61	61	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.98	U	4-PeCDF	10
SFRA-61	61	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.73	U	1,4-HxCDF	11
SFRA-61	61	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.4	U	1,6-HxCDF	12
SFRA-61	61	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	3.72	U	1,9-HxCDF	13
SFRA-61	61	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.1	U	4,6-HxCDF	14
SFRA-61	61	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	88.3		1,4,6-HpCDF	15
SFRA-61	61	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	4.22	U	1,4,9-HpCDF	16
SFRA-61	61	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	177		OCDF	17

SFRA-62	62	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1460		TCDD	1
SFRA-62	62	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.33	J	PeCDD	2
SFRA-62	62	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.85	J	1,4-HxCDD	3
SFRA-62	62	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	24.7	U	1,6-HxCDD	4
SFRA-62	62	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	12	J	1,9-HxCDD	5
SFRA-62	62	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	304		1,4,6-HpCDD	6
SFRA-62	62	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	9040		OCDD	7
SFRA-62	62	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	7.84	J	TCDF	8
SFRA-62	62	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.87	J	1-PeCDF	9
SFRA-62	62	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.73	J	4-PeCDF	10
SFRA-62	62	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5.3	U	1,4-HxCDF	11
SFRA-62	62	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.61	J	1,6-HxCDF	12
SFRA-62	62	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.31	U	1,9-HxCDF	13
SFRA-62	62	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	5.25	J	4,6-HxCDF	14
SFRA-62	62	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	61.8		1,4,6-HpCDF	15
SFRA-62	62	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.81	U	1,4,9-HpCDF	16
SFRA-62	62	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	143		OCDF	17
SFRA-63	63	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2.72	J	TCDD	1
SFRA-63	63	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.12	U	PeCDD	2
SFRA-63	63	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.25	U	1,4-HxCDD	3
SFRA-63	63	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.33	U	1,6-HxCDD	4
SFRA-63	63	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.37	U	1,9-HxCDD	5
SFRA-63	63	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	20.3	J	1,4,6-HpCDD	6
SFRA-63	63	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8050		OCDD	7
SFRA-63	63	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.887	U	TCDF	8
SFRA-63	63	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.562	U	1-PeCDF	9
SFRA-63	63	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.522	U	4-PeCDF	10
SFRA-63	63	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.649	U	1,4-HxCDF	11
SFRA-63	63	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.645	U	1,6-HxCDF	12
SFRA-63	63	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.01	U	1,9-HxCDF	13
SFRA-63	63	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	0.667	U	4,6-HxCDF	14
SFRA-63	63	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.798	J	1,4,6-HpCDF	15
SFRA-63	63	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1	U	1,4,9-HpCDF	16
SFRA-63	63	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	2.92	U	OCDF	17
SFRA-64	64	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	5.86	J	TCDD	1
SFRA-64	64	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.55	U	PeCDD	2
SFRA-64	64	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.75	U	1,4-HxCDD	3
SFRA-64	64	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.85	U	1,6-HxCDD	4
SFRA-64	64	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.86	U	1,9-HxCDD	5
SFRA-64	64	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	69.5		1,4,6-HpCDD	6
SFRA-64	64	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	6700		OCDD	7
SFRA-64	64	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.06	U	TCDF	8
SFRA-64	64	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.818	U	1-PeCDF	9
SFRA-64	64	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.759	U	4-PeCDF	10
SFRA-64	64	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.11	U	1,4-HxCDF	11
SFRA-64	64	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.919	U	1,6-HxCDF	12
SFRA-64	64	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.45	U	1,9-HxCDF	13
SFRA-64	64	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	0.966	U	4,6-HxCDF	14
SFRA-64	64	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	7.36	J	1,4,6-HpCDF	15
SFRA-64	64	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.24	U	1,4,9-HpCDF	16
SFRA-64	64	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	15.4	J	OCDF	17
SFRA-65	65	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	32.6		TCDD	1
SFRA-65	65	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.74	U	PeCDD	2
SFRA-65	65	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.38	U	1,4-HxCDD	3
SFRA-65	65	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	4.38	U	1,6-HxCDD	4

SFRA-65	65	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2.49	U	1,9-HxCDD	5
SFRA-65	65	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	186		1,4,6-HpCDD	6
SFRA-65	65	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	32700		OCDD	7
SFRA-65	65	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.05	U	TCDF	8
SFRA-65	65	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.722	U	1-PeCDF	9
SFRA-65	65	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.724	U	4-PeCDF	10
SFRA-65	65	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.51	U	1,4-HxCDF	11
SFRA-65	65	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.43	U	1,6-HxCDF	12
SFRA-65	65	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.22	U	1,9-HxCDF	13
SFRA-65	65	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.43	U	4,6-HxCDF	14
SFRA-65	65	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	9.79	J	1,4,6-HpCDF	15
SFRA-65	65	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.99	U	1,4,9-HpCDF	16
SFRA-65	65	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	31.1	J	OCDF	17
SFRA-66	66	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	238		TCDD	1
SFRA-66	66	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.88	U	PeCDD	2
SFRA-66	66	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.43	J	1,4-HxCDD	3
SFRA-66	66	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	13.4	J	1,6-HxCDD	4
SFRA-66	66	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.81	J	1,9-HxCDD	5
SFRA-66	66	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	363		1,4,6-HpCDD	6
SFRA-66	66	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	19300		OCDD	7
SFRA-66	66	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.55	J	TCDF	8
SFRA-66	66	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.44	U	1-PeCDF	9
SFRA-66	66	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.42	U	4-PeCDF	10
SFRA-66	66	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.43	U	1,4-HxCDF	11
SFRA-66	66	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.02	U	1,6-HxCDF	12
SFRA-66	66	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	3.28	U	1,9-HxCDF	13
SFRA-66	66	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	2.43	U	4,6-HxCDF	14
SFRA-66	66	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	51.9	J	1,4,6-HpCDF	15
SFRA-66	66	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.73	J	1,4,9-HpCDF	16
SFRA-66	66	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	161		OCDF	17
SFRA-67	67	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3.15	U	TCDD	1
SFRA-67	67	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.69	U	PeCDD	2
SFRA-67	67	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.75	U	1,4-HxCDD	3
SFRA-67	67	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	1.8	U	1,6-HxCDD	4
SFRA-67	67	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	1.89	U	1,9-HxCDD	5
SFRA-67	67	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	23	J	1,4,6-HpCDD	6
SFRA-67	67	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	1900		OCDD	7
SFRA-67	67	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	0.915	U	TCDF	8
SFRA-67	67	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.75	U	1-PeCDF	9
SFRA-67	67	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.761	U	4-PeCDF	10
SFRA-67	67	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.803	U	1,4-HxCDF	11
SFRA-67	67	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.767	U	1,6-HxCDF	12
SFRA-67	67	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.19	U	1,9-HxCDF	13
SFRA-67	67	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	0.786	U	4,6-HxCDF	14
SFRA-67	67	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.892	U	1,4,6-HpCDF	15
SFRA-67	67	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.37	U	1,4,9-HpCDF	16
SFRA-67	67	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	4.59	U	OCDF	17
SFRA-68	68	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	141		TCDD	1
SFRA-68	68	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.83	U	PeCDD	2
SFRA-68	68	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.14	U	1,4-HxCDD	3
SFRA-68	68	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	9.53	J	1,6-HxCDD	4
SFRA-68	68	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.59	J	1,9-HxCDD	5
SFRA-68	68	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	271		1,4,6-HpCDD	6
SFRA-68	68	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8220		OCDD	7
SFRA-68	68	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.59	U	TCDF	8

SFRA-68	68	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.84	J	1-PeCDF	9
SFRA-68	68	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.68	U	4-PeCDF	10
SFRA-68	68	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.85	U	1,4-HxCDF	11
SFRA-68	68	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.9	U	1,6-HxCDF	12
SFRA-68	68	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.21	U	1,9-HxCDF	13
SFRA-68	68	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	2.83	U	4,6-HxCDF	14
SFRA-68	68	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	31.5	J	1,4,6-HpCDF	15
SFRA-68	68	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3.48	U	1,4,9-HpCDF	16
SFRA-68	68	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	99.6	J	OCDF	17
SFRA-69	69	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.25	U	TCDD	1
SFRA-69	69	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.75	U	PeCDD	2
SFRA-69	69	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.36	U	1,4-HxCDD	3
SFRA-69	69	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	2.31	U	1,6-HxCDD	4
SFRA-69	69	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2.47	U	1,9-HxCDD	5
SFRA-69	69	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	20.8	J	1,4,6-HpCDD	6
SFRA-69	69	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	3360		OCDD	7
SFRA-69	69	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.15	U	TCDF	8
SFRA-69	69	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.783	U	1-PeCDF	9
SFRA-69	69	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.753	U	4-PeCDF	10
SFRA-69	69	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.14	U	1,4-HxCDF	11
SFRA-69	69	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.13	U	1,6-HxCDF	12
SFRA-69	69	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.85	U	1,9-HxCDF	13
SFRA-69	69	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.15	U	4,6-HxCDF	14
SFRA-69	69	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1.35	U	1,4,6-HpCDF	15
SFRA-69	69	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.03	U	1,4,9-HpCDF	16
SFRA-69	69	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	4.67	U	OCDF	17
SFRA-70	70	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	89.1		TCDD	1
SFRA-70	70	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.9	U	PeCDD	2
SFRA-70	70	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.97	U	1,4-HxCDD	3
SFRA-70	70	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	6.54	J	1,6-HxCDD	4
SFRA-70	70	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	3.53	J	1,9-HxCDD	5
SFRA-70	70	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	184		1,4,6-HpCDD	6
SFRA-70	70	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11100		OCDD	7
SFRA-70	70	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.6	U	TCDF	8
SFRA-70	70	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.56	U	1-PeCDF	9
SFRA-70	70	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.57	U	4-PeCDF	10
SFRA-70	70	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.65	J	1,4-HxCDF	11
SFRA-70	70	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.55	U	1,6-HxCDF	12
SFRA-70	70	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.43	U	1,9-HxCDF	13
SFRA-70	70	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.61	U	4,6-HxCDF	14
SFRA-70	70	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	23.6	J	1,4,6-HpCDF	15
SFRA-70	70	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.97	U	1,4,9-HpCDF	16
SFRA-70	70	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	64.1	J	OCDF	17
SFRA-71	71	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1.27	U	TCDD	1
SFRA-71	71	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.52	U	PeCDD	2
SFRA-71	71	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.21	U	1,4-HxCDD	3
SFRA-71	71	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	2.26	U	1,6-HxCDD	4
SFRA-71	71	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2.38	U	1,9-HxCDD	5
SFRA-71	71	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	84.3		1,4,6-HpCDD	6
SFRA-71	71	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	10800		OCDD	7
SFRA-71	71	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.32	U	TCDF	8
SFRA-71	71	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.908	U	1-PeCDF	9
SFRA-71	71	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.888	U	4-PeCDF	10
SFRA-71	71	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.725	U	1,4-HxCDF	11
SFRA-71	71	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.668	U	1,6-HxCDF	12

SFRA-71	71	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.13	U	1,9-HxCDF	13
SFRA-71	71	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	0.701	U	4,6-HxCDF	14
SFRA-71	71	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.975	U	1,4,6-HpCDF	15
SFRA-71	71	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.58	U	1,4,9-HpCDF	16
SFRA-71	71	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	4.41	U	OCDF	17
SFRA-72	72	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	573		TCDD	1
SFRA-72	72	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	9.06	J	PeCDD	2
SFRA-72	72	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	54.1	QU	1,4-HxCDD	3
SFRA-72	72	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	964	Q	1,6-HxCDD	4
SFRA-72	72	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	405	Q	1,9-HxCDD	5
SFRA-72	72	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	9020		1,4,6-HpCDD	6
SFRA-72	72	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	52500		OCDD	7
SFRA-72	72	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	12.2	J	TCDF	8
SFRA-72	72	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	6.15	J	1-PeCDF	9
SFRA-72	72	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	19.7	J	4-PeCDF	10
SFRA-72	72	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	117	Q	1,4-HxCDF	11
SFRA-72	72	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	55.5	J	1,6-HxCDF	12
SFRA-72	72	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	17.3	U	1,9-HxCDF	13
SFRA-72	72	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	92.4		4,6-HxCDF	14
SFRA-72	72	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	1200		1,4,6-HpCDF	15
SFRA-72	72	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	116		1,4,9-HpCDF	16
SFRA-72	72	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	2260		OCDF	17
SFRA-73	73	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3090		TCDD	1
SFRA-73	73	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.57	U	PeCDD	2
SFRA-73	73	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.88	U	1,4-HxCDD	3
SFRA-73	73	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	65		1,6-HxCDD	4
SFRA-73	73	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	24.7	J	1,9-HxCDD	5
SFRA-73	73	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	896		1,4,6-HpCDD	6
SFRA-73	73	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14000		OCDD	7
SFRA-73	73	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	21.1		TCDF	8
SFRA-73	73	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.92	U	1-PeCDF	9
SFRA-73	73	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.18	J	4-PeCDF	10
SFRA-73	73	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	7.56	J	1,4-HxCDF	11
SFRA-73	73	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.08	J	1,6-HxCDF	12
SFRA-73	73	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.72	U	1,9-HxCDF	13
SFRA-73	73	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	8.08	J	4,6-HxCDF	14
SFRA-73	73	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	204		1,4,6-HpCDF	15
SFRA-73	73	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	13.1	J	1,4,9-HpCDF	16
SFRA-73	73	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	586		OCDF	17
SFRA-74	74	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	12000		TCDD	1
SFRA-74	74	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	13.4	U	PeCDD	2
SFRA-74	74	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	22.8	QU	1,4-HxCDD	3
SFRA-74	74	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	171	JQ	1,6-HxCDD	4
SFRA-74	74	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	51.6	J	1,9-HxCDD	5
SFRA-74	74	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1260		1,4,6-HpCDD	6
SFRA-74	74	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13600		OCDD	7
SFRA-74	74	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	64.4	J	TCDF	8
SFRA-74	74	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	11.9	U	1-PeCDF	9
SFRA-74	74	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	11.8	U	4-PeCDF	10
SFRA-74	74	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	20.9	U	1,4-HxCDF	11
SFRA-74	74	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	22	U	1,6-HxCDF	12
SFRA-74	74	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	18.8	U	1,9-HxCDF	13
SFRA-74	74	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	17.6	J	4,6-HxCDF	14
SFRA-74	74	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	330	J	1,4,6-HpCDF	15
SFRA-74	74	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	24.4	U	1,4,9-HpCDF	16

SFRA-74	74	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	602	J	OCDF	17
SFRA-75	75	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	4690		TCDD	1
SFRA-75	75	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	6.24	U	PeCDD	2
SFRA-75	75	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	10.5	QU	1,4-HxCDD	3
SFRA-75	75	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	125	JQ	1,6-HxCDD	4
SFRA-75	75	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	35.1	J	1,9-HxCDD	5
SFRA-75	75	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1300		1,4,6-HpCDD	6
SFRA-75	75	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	18800		OCDD	7
SFRA-75	75	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	30.1	J	TCDF	8
SFRA-75	75	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.05	U	1-PeCDF	9
SFRA-75	75	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	7.69	U	4-PeCDF	10
SFRA-75	75	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	12.1	U	1,4-HxCDF	11
SFRA-75	75	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	9.47	U	1,6-HxCDF	12
SFRA-75	75	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	10.8	U	1,9-HxCDF	13
SFRA-75	75	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	11.9	J	4,6-HxCDF	14
SFRA-75	75	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	286		1,4,6-HpCDF	15
SFRA-75	75	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	20.4	J	1,4,9-HpCDF	16
SFRA-75	75	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	1090		OCDF	17
SFRA-76	76	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	941		TCDD	1
SFRA-76	76	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.65	U	PeCDD	2
SFRA-76	76	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	6.09	U	1,4-HxCDD	3
SFRA-76	76	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	12.5	U	1,6-HxCDD	4
SFRA-76	76	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	6.55	U	1,9-HxCDD	5
SFRA-76	76	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	172		1,4,6-HpCDD	6
SFRA-76	76	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	17400		OCDD	7
SFRA-76	76	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.18	J	TCDF	8
SFRA-76	76	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.26	U	1-PeCDF	9
SFRA-76	76	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.13	U	4-PeCDF	10
SFRA-76	76	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	3.02	U	1,4-HxCDF	11
SFRA-76	76	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.95	U	1,6-HxCDF	12
SFRA-76	76	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.1	U	1,9-HxCDF	13
SFRA-76	76	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.04	U	4,6-HxCDF	14
SFRA-76	76	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	31	J	1,4,6-HpCDF	15
SFRA-76	76	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	5.6	U	1,4,9-HpCDF	16
SFRA-76	76	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	58.1	J	OCDF	17
SFRA-77	77	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1020		TCDD	1
SFRA-77	77	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.79	U	PeCDD	2
SFRA-77	77	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	8.93	U	1,4-HxCDD	3
SFRA-77	77	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	28.9	J	1,6-HxCDD	4
SFRA-77	77	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	10.1	J	1,9-HxCDD	5
SFRA-77	77	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	485		1,4,6-HpCDD	6
SFRA-77	77	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	23800		OCDD	7
SFRA-77	77	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	10	J	TCDF	8
SFRA-77	77	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.03	U	1-PeCDF	9
SFRA-77	77	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.98	U	4-PeCDF	10
SFRA-77	77	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.44	J	1,4-HxCDF	11
SFRA-77	77	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.96	J	1,6-HxCDF	12
SFRA-77	77	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.93	U	1,9-HxCDF	13
SFRA-77	77	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.75	U	4,6-HxCDF	14
SFRA-77	77	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	98.4		1,4,6-HpCDF	15
SFRA-77	77	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.99	U	1,4,9-HpCDF	16
SFRA-77	77	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	246		OCDF	17
SFRA-78	78	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2430		TCDD	1
SFRA-78	78	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.9	J	PeCDD	2
SFRA-78	78	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	9.23	QU	1,4-HxCDD	3

SFRA-78	78	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	124	Q	1,6-HxCDD	4
SFRA-78	78	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	36.7	J	1,9-HxCDD	5
SFRA-78	78	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	821		1,4,6-HpCDD	6
SFRA-78	78	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8100		OCDD	7
SFRA-78	78	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	14.3		TCDF	8
SFRA-78	78	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.45	J	1-PeCDF	9
SFRA-78	78	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.93	J	4-PeCDF	10
SFRA-78	78	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	8.82	J	1,4-HxCDF	11
SFRA-78	78	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.78	J	1,6-HxCDF	12
SFRA-78	78	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.4	U	1,9-HxCDF	13
SFRA-78	78	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	13	J	4,6-HxCDF	14
SFRA-78	78	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	194		1,4,6-HpCDF	15
SFRA-78	78	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	13	J	1,4,9-HpCDF	16
SFRA-78	78	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	353		OCDF	17
SFRA-79	79	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1500		TCDD	1
SFRA-79	79	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.09	U	PeCDD	2
SFRA-79	79	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	11.7	QU	1,4-HxCDD	3
SFRA-79	79	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	69.8	Q	1,6-HxCDD	4
SFRA-79	79	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	16.8	J	1,9-HxCDD	5
SFRA-79	79	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	449		1,4,6-HpCDD	6
SFRA-79	79	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5060		OCDD	7
SFRA-79	79	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9.31	J	TCDF	8
SFRA-79	79	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.2	U	1-PeCDF	9
SFRA-79	79	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.09	U	4-PeCDF	10
SFRA-79	79	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5.28	U	1,4-HxCDF	11
SFRA-79	79	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	4.93	U	1,6-HxCDF	12
SFRA-79	79	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	5.17	U	1,9-HxCDF	13
SFRA-79	79	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.84	U	4,6-HxCDF	14
SFRA-79	79	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	105		1,4,6-HpCDF	15
SFRA-79	79	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.54	J	1,4,9-HpCDF	16
SFRA-79	79	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	145		OCDF	17
SFRA-80	80	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	745		TCDD	1
SFRA-80	80	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.45	U	PeCDD	2
SFRA-80	80	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	7.73	U	1,4-HxCDD	3
SFRA-80	80	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	28.4	J	1,6-HxCDD	4
SFRA-80	80	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	8.23	U	1,9-HxCDD	5
SFRA-80	80	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	391		1,4,6-HpCDD	6
SFRA-80	80	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8240		OCDD	7
SFRA-80	80	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.21	J	TCDF	8
SFRA-80	80	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.69	U	1-PeCDF	9
SFRA-80	80	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.55	U	4-PeCDF	10
SFRA-80	80	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	4.31	U	1,4-HxCDF	11
SFRA-80	80	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	3.81	U	1,6-HxCDF	12
SFRA-80	80	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	6.38	U	1,9-HxCDF	13
SFRA-80	80	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.55	U	4,6-HxCDF	14
SFRA-80	80	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	97.9		1,4,6-HpCDF	15
SFRA-80	80	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.26	U	1,4,9-HpCDF	16
SFRA-80	80	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	189		OCDF	17
SFRA-81	81	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	240		TCDD	1
SFRA-81	81	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.76	U	PeCDD	2
SFRA-81	81	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.12	QU	1,4-HxCDD	3
SFRA-81	81	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	13.2	JQ	1,6-HxCDD	4
SFRA-81	81	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.37	U	1,9-HxCDD	5
SFRA-81	81	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	145		1,4,6-HpCDD	6
SFRA-81	81	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7740		OCDD	7

SFRA-81	81	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	5.17	J	TCDF	8
SFRA-81	81	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.8	J	1-PeCDF	9
SFRA-81	81	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.09	U	4-PeCDF	10
SFRA-81	81	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	4.64	J	1,4-HxCDF	11
SFRA-81	81	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.93	U	1,6-HxCDF	12
SFRA-81	81	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	3.03	U	1,9-HxCDF	13
SFRA-81	81	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	2.02	U	4,6-HxCDF	14
SFRA-81	81	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	33.9	J	1,4,6-HpCDF	15
SFRA-81	81	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	3	U	1,4,9-HpCDF	16
SFRA-81	81	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	55.1	J	OCDF	17
SFRA-82	82	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	677		TCDD	1
SFRA-82	82	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	5.12	J	PeCDD	2
SFRA-82	82	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.43	U	1,4-HxCDD	3
SFRA-82	82	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	38.4	JQ	1,6-HxCDD	4
SFRA-82	82	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	15	J	1,9-HxCDD	5
SFRA-82	82	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	377		1,4,6-HpCDD	6
SFRA-82	82	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	15100		OCDD	7
SFRA-82	82	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9.19	J	TCDF	8
SFRA-82	82	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	11.2	J	1-PeCDF	9
SFRA-82	82	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.95	U	4-PeCDF	10
SFRA-82	82	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	15.3	J	1,4-HxCDF	11
SFRA-82	82	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	8.06	J	1,6-HxCDF	12
SFRA-82	82	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	6.97	J	1,9-HxCDF	13
SFRA-82	82	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	6.92	J	4,6-HxCDF	14
SFRA-82	82	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	86.6		1,4,6-HpCDF	15
SFRA-82	82	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	12.3	J	1,4,9-HpCDF	16
SFRA-82	82	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	200		OCDF	17
SFRA-83	83	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	887		TCDD	1
SFRA-83	83	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.67	J	PeCDD	2
SFRA-83	83	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.08	J	1,4-HxCDD	3
SFRA-83	83	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	57.7	Q	1,6-HxCDD	4
SFRA-83	83	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	24.1	J	1,9-HxCDD	5
SFRA-83	83	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	502		1,4,6-HpCDD	6
SFRA-83	83	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11900		OCDD	7
SFRA-83	83	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.11	J	TCDF	8
SFRA-83	83	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.01	J	1-PeCDF	9
SFRA-83	83	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.07	J	4-PeCDF	10
SFRA-83	83	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	6.69	J	1,4-HxCDF	11
SFRA-83	83	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.38	J	1,6-HxCDF	12
SFRA-83	83	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.74	J	1,9-HxCDF	13
SFRA-83	83	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	7.15	J	4,6-HxCDF	14
SFRA-83	83	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	123		1,4,6-HpCDF	15
SFRA-83	83	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	10.4	J	1,4,9-HpCDF	16
SFRA-83	83	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	220		OCDF	17
SFRA-84	84	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	421		TCDD	1
SFRA-84	84	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.81	J	PeCDD	2
SFRA-84	84	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	6.11	U	1,4-HxCDD	3
SFRA-84	84	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	24.4	J	1,6-HxCDD	4
SFRA-84	84	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	11.6	J	1,9-HxCDD	5
SFRA-84	84	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	400		1,4,6-HpCDD	6
SFRA-84	84	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12400		OCDD	7
SFRA-84	84	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	16.1		TCDF	8
SFRA-84	84	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	17.9	J	1-PeCDF	9
SFRA-84	84	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.7	J	4-PeCDF	10
SFRA-84	84	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	24.7	J	1,4-HxCDF	11

SFRA-84	84	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.88	U	1,6-HxCDF	12
SFRA-84	84	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	8.98	U	1,9-HxCDF	13
SFRA-84	84	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	6.87	J	4,6-HxCDF	14
SFRA-84	84	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	86.3		1,4,6-HpCDF	15
SFRA-84	84	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	16	J	1,4,9-HpCDF	16
SFRA-84	84	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	183		OCDF	17
SFRA-85	85	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	1250		TCDD	1
SFRA-85	85	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	3.94	U	PeCDD	2
SFRA-85	85	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	6.56	U	1,4-HxCDD	3
SFRA-85	85	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	56.2	JQ	1,6-HxCDD	4
SFRA-85	85	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	21.6	J	1,9-HxCDD	5
SFRA-85	85	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	465		1,4,6-HpCDD	6
SFRA-85	85	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11500		OCDD	7
SFRA-85	85	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	12.4		TCDF	8
SFRA-85	85	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	5.95	J	1-PeCDF	9
SFRA-85	85	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	5.32	U	4-PeCDF	10
SFRA-85	85	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	9.56	J	1,4-HxCDF	11
SFRA-85	85	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	5.97	U	1,6-HxCDF	12
SFRA-85	85	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.66	J	1,9-HxCDF	13
SFRA-85	85	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	6.61	J	4,6-HxCDF	14
SFRA-85	85	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	104		1,4,6-HpCDF	15
SFRA-85	85	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	8.97	J	1,4,9-HpCDF	16
SFRA-85	85	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	194		OCDF	17
SFRA-86	86	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	745		TCDD	1
SFRA-86	86	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.57	U	PeCDD	2
SFRA-86	86	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	3.11	J	1,4-HxCDD	3
SFRA-86	86	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	9.82	J	1,6-HxCDD	4
SFRA-86	86	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	6.1	J	1,9-HxCDD	5
SFRA-86	86	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	219		1,4,6-HpCDD	6
SFRA-86	86	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	8390		OCDD	7
SFRA-86	86	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	4.56	U	TCDF	8
SFRA-86	86	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.97	U	1-PeCDF	9
SFRA-86	86	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.45	U	4-PeCDF	10
SFRA-86	86	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	2.43	U	1,4-HxCDF	11
SFRA-86	86	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.31	U	1,6-HxCDF	12
SFRA-86	86	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.9	U	1,9-HxCDF	13
SFRA-86	86	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	2.49	J	4,6-HxCDF	14
SFRA-86	86	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	35.3	J	1,4,6-HpCDF	15
SFRA-86	86	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.36	J	1,4,9-HpCDF	16
SFRA-86	86	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	112	J	OCDF	17
SFRA-87	87	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	226		TCDD	1
SFRA-87	87	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.45	U	PeCDD	2
SFRA-87	87	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	1.99	U	1,4-HxCDD	3
SFRA-87	87	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	6.12	J	1,6-HxCDD	4
SFRA-87	87	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2.09	U	1,9-HxCDD	5
SFRA-87	87	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	112		1,4,6-HpCDD	6
SFRA-87	87	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	5020		OCDD	7
SFRA-87	87	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	3.58	J	TCDF	8
SFRA-87	87	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	0.964	J	1-PeCDF	9
SFRA-87	87	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.859	J	4-PeCDF	10
SFRA-87	87	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.19	U	1,4-HxCDF	11
SFRA-87	87	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.11	U	1,6-HxCDF	12
SFRA-87	87	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.65	U	1,9-HxCDF	13
SFRA-87	87	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.15	U	4,6-HxCDF	14
SFRA-87	87	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	16.4	J	1,4,6-HpCDF	15

SFRA-87	87	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.2	U	1,4,9-HpCDF	16
SFRA-87	87	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	38.6	J	OCDF	17
SFRA-88	88	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	139		TCDD	1
SFRA-88	88	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.47	U	PeCDD	2
SFRA-88	88	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.38	U	1,4-HxCDD	3
SFRA-88	88	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	5.39	J	1,6-HxCDD	4
SFRA-88	88	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	4.5	U	1,9-HxCDD	5
SFRA-88	88	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	161		1,4,6-HpCDD	6
SFRA-88	88	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7160		OCDD	7
SFRA-88	88	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.26	U	TCDF	8
SFRA-88	88	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.76	J	1-PeCDF	9
SFRA-88	88	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	0.933	U	4-PeCDF	10
SFRA-88	88	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.98	J	1,4-HxCDF	11
SFRA-88	88	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.04	J	1,6-HxCDF	12
SFRA-88	88	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.1	U	1,9-HxCDF	13
SFRA-88	88	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.51	U	4,6-HxCDF	14
SFRA-88	88	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	21	J	1,4,6-HpCDF	15
SFRA-88	88	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.5	U	1,4,9-HpCDF	16
SFRA-88	88	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	76.8	J	OCDF	17
SFRA-89	89	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	595		TCDD	1
SFRA-89	89	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.82	U	PeCDD	2
SFRA-89	89	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	8.42	QU	1,4-HxCDD	3
SFRA-89	89	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	69.9	Q	1,6-HxCDD	4
SFRA-89	89	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	12.2	QU	1,9-HxCDD	5
SFRA-89	89	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	358		1,4,6-HpCDD	6
SFRA-89	89	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14400		OCDD	7
SFRA-89	89	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9.13	J	TCDF	8
SFRA-89	89	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.9	J	1-PeCDF	9
SFRA-89	89	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	6.36	J	4-PeCDF	10
SFRA-89	89	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5.94	J	1,4-HxCDF	11
SFRA-89	89	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.52	J	1,6-HxCDF	12
SFRA-89	89	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	4.36	U	1,9-HxCDF	13
SFRA-89	89	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	4.8	J	4,6-HxCDF	14
SFRA-89	89	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	78.8		1,4,6-HpCDF	15
SFRA-89	89	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	4.86	U	1,4,9-HpCDF	16
SFRA-89	89	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	63.4	J	OCDF	17
SFRA-90	90	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	543		TCDD	1
SFRA-90	90	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.1	U	PeCDD	2
SFRA-90	90	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	6.04	U	1,4-HxCDD	3
SFRA-90	90	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	107		1,6-HxCDD	4
SFRA-90	90	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	31.3	J	1,9-HxCDD	5
SFRA-90	90	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	2210		1,4,6-HpCDD	6
SFRA-90	90	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	27800		OCDD	7
SFRA-90	90	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	8.24	J	TCDF	8
SFRA-90	90	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.01	J	1-PeCDF	9
SFRA-90	90	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	7.59	J	4-PeCDF	10
SFRA-90	90	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	31.7	J	1,4-HxCDF	11
SFRA-90	90	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	11.9	J	1,6-HxCDF	12
SFRA-90	90	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	9.64	J	1,9-HxCDF	13
SFRA-90	90	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	19.8	J	4,6-HxCDF	14
SFRA-90	90	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	333		1,4,6-HpCDF	15
SFRA-90	90	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	29.4	J	1,4,9-HpCDF	16
SFRA-90	90	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	899		OCDF	17
SFRA-91	91	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	778		TCDD	1
SFRA-91	91	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.44	U	PeCDD	2

SFRA-91	91	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	14.8	JQ	1,4-HxCDD	3
SFRA-91	91	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	72.4	Q	1,6-HxCDD	4
SFRA-91	91	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	21.6	J	1,9-HxCDD	5
SFRA-91	91	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1010		1,4,6-HpCDD	6
SFRA-91	91	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	14300		OCDD	7
SFRA-91	91	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	6.7	J	TCDF	8
SFRA-91	91	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.56	J	1-PeCDF	9
SFRA-91	91	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	4.02	J	4-PeCDF	10
SFRA-91	91	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	14.2	J	1,4-HxCDF	11
SFRA-91	91	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.04	J	1,6-HxCDF	12
SFRA-91	91	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.88	J	1,9-HxCDF	13
SFRA-91	91	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	9.37	J	4,6-HxCDF	14
SFRA-91	91	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	160		1,4,6-HpCDF	15
SFRA-91	91	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	12.9	J	1,4,9-HpCDF	16
SFRA-91	91	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	286		OCDF	17
SFRA-92	92	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2.92	J	TCDD	1
SFRA-92	92	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.01	U	PeCDD	2
SFRA-92	92	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	2.31	U	1,4-HxCDD	3
SFRA-92	92	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	2.25	U	1,6-HxCDD	4
SFRA-92	92	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	2.42	U	1,9-HxCDD	5
SFRA-92	92	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	64.9		1,4,6-HpCDD	6
SFRA-92	92	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	4650		OCDD	7
SFRA-92	92	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	1.46	J	TCDF	8
SFRA-92	92	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.06	U	1-PeCDF	9
SFRA-92	92	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.03	U	4-PeCDF	10
SFRA-92	92	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	1.13	U	1,4-HxCDF	11
SFRA-92	92	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	1.04	U	1,6-HxCDF	12
SFRA-92	92	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	1.64	U	1,9-HxCDF	13
SFRA-92	92	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	1.11	U	4,6-HxCDF	14
SFRA-92	92	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	4.77	J	1,4,6-HpCDF	15
SFRA-92	92	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	2.11	U	1,4,9-HpCDF	16
SFRA-92	92	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	8.67	U	OCDF	17
SFRA-93	93	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	895		TCDD	1
SFRA-93	93	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	2.49	U	PeCDD	2
SFRA-93	93	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	11.4	J	1,4-HxCDD	3
SFRA-93	93	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	32.9	J	1,6-HxCDD	4
SFRA-93	93	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	14.3	J	1,9-HxCDD	5
SFRA-93	93	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	757		1,4,6-HpCDD	6
SFRA-93	93	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	12300		OCDD	7
SFRA-93	93	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	9.96	J	TCDF	8
SFRA-93	93	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.14	U	1-PeCDF	9
SFRA-93	93	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.93	J	4-PeCDF	10
SFRA-93	93	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	13.1	J	1,4-HxCDF	11
SFRA-93	93	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	6.11	J	1,6-HxCDF	12
SFRA-93	93	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	3.81	J	1,9-HxCDF	13
SFRA-93	93	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	7.89	J	4,6-HxCDF	14
SFRA-93	93	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	127		1,4,6-HpCDF	15
SFRA-93	93	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	9.77	J	1,4,9-HpCDF	16
SFRA-93	93	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	301		OCDF	17
SFRA-94	94	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	2980		TCDD	1
SFRA-94	94	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	13.7	U	PeCDD	2
SFRA-94	94	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	5.53	J	1,4-HxCDD	3
SFRA-94	94	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	19.8	J	1,6-HxCDD	4
SFRA-94	94	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	7.94	J	1,9-HxCDD	5
SFRA-94	94	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	355		1,4,6-HpCDD	6

SFRA-94	94	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	11000		OCDD	7
SFRA-94	94	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	18.8		TCDF	8
SFRA-94	94	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	1.7	J	1-PeCDF	9
SFRA-94	94	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	2.26	J	4-PeCDF	10
SFRA-94	94	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	5.31	J	1,4-HxCDF	11
SFRA-94	94	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	2.58	J	1,6-HxCDF	12
SFRA-94	94	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	2.56	U	1,9-HxCDF	13
SFRA-94	94	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	3.34	J	4,6-HxCDF	14
SFRA-94	94	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	55.9	J	1,4,6-HpCDF	15
SFRA-94	94	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	4.94	J	1,4,9-HpCDF	16
SFRA-94	94	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	89	J	OCDF	17
SFRA-95	95	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	16300		TCDD	1
SFRA-95	95	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	8.47	U	PeCDD	2
SFRA-95	95	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	28	U	1,4-HxCDD	3
SFRA-95	95	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	110	J	1,6-HxCDD	4
SFRA-95	95	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	29.9	U	1,9-HxCDD	5
SFRA-95	95	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1050		1,4,6-HpCDD	6
SFRA-95	95	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	13300		OCDD	7
SFRA-95	95	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	91.2		TCDF	8
SFRA-95	95	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	9.85	U	1-PeCDF	9
SFRA-95	95	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	9.64	U	4-PeCDF	10
SFRA-95	95	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	23.3	U	1,4-HxCDF	11
SFRA-95	95	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	13.9	U	1,6-HxCDF	12
SFRA-95	95	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	23.5	U	1,9-HxCDF	13
SFRA-95	95	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	23.5	U	4,6-HxCDF	14
SFRA-95	95	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	575		1,4,6-HpCDF	15
SFRA-95	95	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	33.2	U	1,4,9-HpCDF	16
SFRA-95	95	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	745		OCDF	17
SFRA-96	96	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	964		TCDD	1
SFRA-96	96	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	4.12	U	PeCDD	2
SFRA-96	96	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	11.1	QU	1,4-HxCDD	3
SFRA-96	96	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	34.7	JQ	1,6-HxCDD	4
SFRA-96	96	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	12.3	U	1,9-HxCDD	5
SFRA-96	96	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	376		1,4,6-HpCDD	6
SFRA-96	96	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	9070		OCDD	7
SFRA-96	96	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	8.31	J	TCDF	8
SFRA-96	96	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	3.79	J	1-PeCDF	9
SFRA-96	96	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	3.85	J	4-PeCDF	10
SFRA-96	96	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	7.52	J	1,4-HxCDF	11
SFRA-96	96	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	7.56	U	1,6-HxCDF	12
SFRA-96	96	2,3,4,6,7,8-Hexachlorodibenzofuran	72918-21-9	10.9	U	1,9-HxCDF	13
SFRA-96	96	1,2,3,7,8,9-Hexachlorodibenzofuran	60851-34-5	7.14	U	4,6-HxCDF	14
SFRA-96	96	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	74.7		1,4,6-HpCDF	15
SFRA-96	96	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	7.98	J	1,4,9-HpCDF	16
SFRA-96	96	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	220		OCDF	17
SFRA-97	97	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	145		TCDD	1
SFRA-97	97	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	1.86	U	PeCDD	2
SFRA-97	97	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	4.48	QU	1,4-HxCDD	3
SFRA-97	97	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	7.55	JQ	1,6-HxCDD	4
SFRA-97	97	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	5.19	U	1,9-HxCDD	5
SFRA-97	97	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	116		1,4,6-HpCDD	6
SFRA-97	97	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	7400		OCDD	7
SFRA-97	97	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	2.74	J	TCDF	8
SFRA-97	97	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	2.81	J	1-PeCDF	9
SFRA-97	97	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	1.11	U	4-PeCDF	10

Abbreviation 1	Abbreviation 2	IUPAC name	CAS #	Type
TCDD	2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Dioxin
PeCDD	1,2,3,7,8-PeCDD	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	Dioxin
1,4-HxCDD	1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	Dioxin
1,6-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	Dioxin
1,9-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	Dioxin
1,4,6-HpCDD	1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	Dioxin
OCDD	1,2,3,4,5,6,7,8-OCDD	Octachlorodibenzo-p-dioxin	3268-87-9	Dioxin
TCDF	2,3,7,8-TCDF	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	Furan
1-PeCDF	1,2,3,7,8-PeCDF	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	Furan
4-PeCDF	2,3,4,7,8-PeCDF	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	Furan
1,4-HxCDF	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	Furan
1,6-HxCDF	1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	Furan
1,9-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	Furan
4,6-HxCDF	2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	Furan
1,4,6-HpCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	Furan
1,4,9-HpCDF	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	Furan
OCDF	1,2,3,4,5,6,7,8-OCDF	Octachlorodibenzofuran	39001-02-0	Furan
PCB 77	3,3',4,4'-TCB	3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	Dioxin-like PCB
PCB 81	3,4,4',5-TCB	3,4,4',5-Tetrachlorobiphenyl	70362-50-4	Dioxin-like PCB
PCB 105	2,3,3',4,4'-PeCB	2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	Dioxin-like PCB
PCB 114	2,3,4,4',5-PeCB	2,3,4,4',5-Pentachlorobiphenyl	74472-37-0	Dioxin-like PCB
PCB 118	2,3',4,4',5-PeCB	2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	Dioxin-like PCB
PCB 123	2,3',4,4',5'-PeCB	2,3',4,4',5'-Pentachlorobiphenyl	65510-44-3	Dioxin-like PCB
PCB 126	3,3',4,4',5-PeCB	3,3',4,4',5-Pentachlorobiphenyl	57465-28-8	Dioxin-like PCB
PCB 156	2,3,3',4,4',5-HxCB	2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	Dioxin-like PCB
PCB 157	2,3,3',4,4',5'-HxCB	2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	Dioxin-like PCB
PCB 167	2,3',4,4',5,5'-HxCB	2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	Dioxin-like PCB
PCB 169	3,3',4,4',5,5'-HxCB	3,3',4,4',5,5'-Hexachlorobiphenyl	32774-16-6	Dioxin-like PCB
PCB 189	2,3,3',4,4',5,5'-HpCB	2,3,3',4,4',5,5'-Heptachlorobiphenyl	39635-31-9	Dioxin-like PCB

Acronym List

A	Data qualifier used to indicate an estimated result.
CAS	Chemical abstracts service
CLP	Contract Laboratory Program
CSM	Conceptual site model
CV	Coefficient of variation
DL	Detection limit
DU	Decision unit
E	Data qualifier used to indicate an estimated result. This qualifier indicates that the concentration exceeded the instrument calibration range, but did not saturate the detector.
EDL	Estimated detection limit
EMPC	Estimated maximum possible concentration
EPA	U.S. Environmental Protection Agency
HpCDD	Heptachlorodibenzo(p)dioxin
HpCDF	Heptachlorodibenzofuran
HxCDD	Hexachlorodibenzo(p)dioxin
HxCDF	Hexachlorodibenzofuran
ICS	Incremental composite sample
ISM	Incremental sampling methodology
ITRC	Interstate Technology and Regulatory Council
IUPAC	International Union of Pure and Applied Chemistry
J	Data qualifier used to indicate an estimated result. This qualifier indicates either: (1) a concentration between the detection limit and quantitation limit or (2) a concentration qualified as estimated because of some other quality control failure.
KM	Kaplan-Meier
ND	Nondetect
OCDD	Octachlorodibenzo(p)dioxin
OCDF	Octachlorodibenzofuran
PCB	Polychlorinated biphenyl
PeCDD	Pentachlorodibenzo(p)dioxin
PeCDF	Pentachlorodibenzofuran
QC	Quality control
R	Data qualifier used to indicate a rejected result.
RSD	Relative standard deviation
SD	Standard deviation
SOW	Scope of work
TCDD	Tetrachlorodibenzo(p)dioxin
TCDF	Tetrachlorodibenzofuran
TEC	Toxicity equivalence concentration
TEF	Toxicity equivalence factor
TEQ	Toxicity equivalence
U	Data qualifier used to indicate a nondetected result.
UCL	Upper confidence limit
WHO	World Health Organization

Particulate Air Monitoring Data Ellisville (RV007)

April 7, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Upwind (Background) Particulate Data EA3 UW April 7, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	24.7	9.5	62	1.1653	14:36:23	7-Apr-14
2	22.7	10	71	1.1529	14:51:23	7-Apr-14
3	23.1	10.2	73	1.2323	15:06:23	7-Apr-14
4	24.8	10.3	75	1.3985	15:21:23	7-Apr-14
5	53.2	10.5	77	1.0917	15:36:23	7-Apr-14
6	23.1	10.8	77	1.2122	15:51:23	7-Apr-14
7	18.9	11.1	76	1.1309	16:06:23	7-Apr-14
8	17.5	11.3	74	1.0236	16:21:23	7-Apr-14
9	19.4	11.5	75	1.0623	16:36:23	7-Apr-14
10	20.8	11.6	75	1.125	16:51:23	7-Apr-14

Ellisville (RV007) Downwind Particulate Data EA3 DW April 7, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	2.1	11	59	0.7554	14:43:11	7-Apr-14
2	15.9	11.2	67	4.1239	14:58:11	7-Apr-14
3	20.5	11.3	70	2.9514	15:13:11	7-Apr-14
4	22.5	11.5	72	2.0618	15:28:11	7-Apr-14
5	21.1	11.7	73	1.6725	15:43:11	7-Apr-14
6	18.2	12.1	73	1.5644	15:58:11	7-Apr-14
7	18.6	12.3	72	1.7096	16:13:11	7-Apr-14
8	17.5	12.5	71	1.2119	16:28:11	7-Apr-14
9	19.7	12.6	72	1.235	16:43:11	7-Apr-14

PID (VOC) results Ellisville (RV007)

April 7, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind (Background) PID Data EA3 UW April 7, 2014

Line#	Date Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	OXY (%)	Alarm
1	4/7/2014 14:35	0.2		0		0		0	20.9	
2	4/7/2014 14:50	0.3		0		0		0	20.9	
3	4/7/2014 15:05	0.1		0		0		0	20.9	

Ellisville (RV007) Down wind PID Data EA3 DW April 7, 2014

Line#	Date Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	OXY (%)	Alarm
1	4/7/2014 14:30	0.2		0		0.1		0	20.9	
2	4/7/2014 14:45	0.2		0		0.1		0	20.9	
3	4/7/2014 15:00	0.3		0		0.1		0	20.9	
4	4/7/2014 15:15	0.3		0		0.1		0	20.9	
5	4/7/2014 15:30	0.3		0		0.1		0	20.9	
6	4/7/2014 15:45	0.4		0		0.1		0	20.9	
7	4/7/2014 16:00	0.4		0		0.1		0	20.9	
8	4/7/2014 16:15	0.4		0		0.1		0	20.9	
9	4/7/2014 16:30	0.5		0		0.1		0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

April 8, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Particulate Air Monitoring Data Ellisville RV007
April 8, 2014

Ellisville (RV007) Down wind PM-10 Data EA3 April 8, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	18.6	18.2	41	0.4307	8:19:00	8-Apr-14
2	18.5	16.5	46	0.4562	8:34:00	8-Apr-14
3	20.4	15.6	49	0.4503	8:49:00	8-Apr-14
4	20.6	15.2	51	0.5044	9:04:00	8-Apr-14
5	21.3	15.3	52	0.5102	9:19:00	8-Apr-14
6	22.2	15.2	52	0.5118	9:34:00	8-Apr-14
7	22.4	15.1	52	0.5049	9:49:00	8-Apr-14
8	19.8	15.1	52	0.5226	10:04:00	8-Apr-14
9	15.5	15.4	51	0.5149	10:19:00	8-Apr-14
10	15.1	15.6	49	0.5218	10:34:00	8-Apr-14
11	14.6	15.8	49	0.5043	10:49:00	8-Apr-14
12	10.9	16	47	0.4782	11:04:00	8-Apr-14
13	8.4	16	45	0.5135	11:19:00	8-Apr-14
14	6	16.2	44	0.419	11:34:00	8-Apr-14
15	5.5	16.6	42	0.4008	11:49:00	8-Apr-14
16	5.4	16.7	41	0.3763	12:04:00	8-Apr-14
17	5.3	17.1	41	0.3919	12:19:00	8-Apr-14
18	4.6	17.5	39	0.3599	12:34:00	8-Apr-14
19	4.9	17.7	38	0.3613	12:49:00	8-Apr-14
20	5.1	18.1	37	0.3637	13:04:00	8-Apr-14
21	6.8	18.6	35	0.4076	13:19:00	8-Apr-14
22	6.5	19.5	33	0.4184	13:34:00	8-Apr-14
23	5.2	20.7	31	0.3703	13:49:00	8-Apr-14
24	3.7	21.3	30	0.3788	14:04:00	8-Apr-14
25	3.7	21.1	29	0.4423	14:19:00	8-Apr-14
26	5.5	21	29	0.4418	14:34:00	8-Apr-14
27	4.3	21.1	28	0.468	14:49:00	8-Apr-14
28	5.5	22.4	27	0.528	15:04:00	8-Apr-14
29	4.7	23	25	0.5262	15:19:00	8-Apr-14
30	5.3	22.3	27	0.5177	15:34:00	8-Apr-14
31	3.5	22.2	28	0.458	15:49:00	8-Apr-14
32	4	21.3	28	0.4684	16:04:00	8-Apr-14
33	4.8	20.8	29	0.4285	16:19:00	8-Apr-14

Particulate Air Monitoring Data Ellisville RV007
 April 8, 2014

Ellisville (RV007) Up wind PM-10 Data April8, 2014

record	(MASS)ug	Temp	RHumidity	Diameter	time	date
1	17.1	14	44	0.4993	8:25:34	8-Apr-14
2	15.9	14.1	53	0.5358	8:40:34	8-Apr-14
3	15.3	14.5	54	0.5249	8:55:34	8-Apr-14
4	14.2	15.4	53	0.5546	9:10:34	8-Apr-14
5	14.2	16.7	50	0.5392	9:25:34	8-Apr-14
6	15.3	18.5	46	0.5235	9:40:34	8-Apr-14
7	13.7	19.7	43	0.5634	9:55:34	8-Apr-14
8	10.4	21.1	39	0.528	10:10:34	8-Apr-14
9	8.8	21.7	36	0.5465	10:25:34	8-Apr-14
10	10.1	22	35	0.55	10:40:34	8-Apr-14
11	8.8	21.7	34	0.5565	10:55:34	8-Apr-14
12	5.7	21.4	33	0.4784	11:10:34	8-Apr-14
13	4.4	21.1	33	0.4568	11:25:34	8-Apr-14
14	4	22.5	32	0.4633	11:40:34	8-Apr-14
15	4.3	23.6	29	0.5321	11:55:34	8-Apr-14
16	3.4	24.5	27	0.4281	12:10:34	8-Apr-14
17	3.4	23.7	27	0.4124	12:25:34	8-Apr-14
18	3.5	22.7	27	0.4267	12:40:34	8-Apr-14
19	3.7	22.4	28	0.4181	12:55:34	8-Apr-14
20	4.1	21.6	28	0.4091	13:10:34	8-Apr-14
21	4.5	21.2	28	0.4718	13:25:34	8-Apr-14
22	4.3	21.1	28	0.4569	13:40:34	8-Apr-14
23	3.3	21.2	28	0.4539	13:55:34	8-Apr-14
24	3	21.7	27	0.4522	14:10:34	8-Apr-14
25	2.9	21.9	26	0.4689	14:25:34	8-Apr-14
26	2.8	22.6	25	0.5172	14:40:34	8-Apr-14
27	2.5	24	24	0.5031	14:55:34	8-Apr-14
28	3	25.4	22	0.7106	15:10:34	8-Apr-14
29	2.5	25.5	22	0.5146	15:25:34	8-Apr-14
30	2.3	25.4	23	0.4222	15:40:34	8-Apr-14
31	1.9	25.5	21	0.376	15:55:34	8-Apr-14
32	3.3	24.1	22	0.5336	16:10:34	8-Apr-14

PID (VOC) results Ellisville (RV007)

April 8, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

The Upwind PID was not ran on April 8, 2014.

PID (VOC) results Ellisville RV007
April 8, 2014

Ellisville (RV007) Downwind PID Data EA3 UW April 8, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	4/8/2014 8:02	0.3	0	0.8	0	20.9	
2	4/8/2014 8:17	0	0	0.3	0	20.9	
3	4/8/2014 8:32	0	0	0	0	20.9	
4	4/8/2014 8:47	0	0	0	0	20.9	
5	4/8/2014 9:02	0	0	0	0	20.9	
6	4/8/2014 9:17	0	0	0	0	20.9	
7	4/8/2014 9:32	0	0	0	0	20.9	
8	4/8/2014 9:47	0	0	0	0	20.9	
9	4/8/2014 10:02	0	0	0	0	20.9	
10	4/8/2014 10:17	0	0	0	0	20.9	
11	4/8/2014 10:32	0	0	0	0	20.9	
12	4/8/2014 10:47	0	0	0	0	20.9	
13	4/8/2014 11:02	0	0	0	0	20.9	
14	4/8/2014 11:17	0	0	0	0	20.9	
15	4/8/2014 11:32	0	0	0	0	20.9	
16	4/8/2014 11:47	0	0	0	0	20.9	
17	4/8/2014 12:02	0	0	0	0	20.9	
18	4/8/2014 12:17	0	0	0	0	20.9	
19	4/8/2014 12:32	0	0	0	0	20.9	
20	4/8/2014 12:47	0	0	0	0	20.9	
21	4/8/2014 13:02	0	0	0	0	20.9	
22	4/8/2014 13:17	0	0	0	0	20.9	
23	4/8/2014 13:32	0	0	0	0	20.9	
24	4/8/2014 13:47	0	0	0	0	20.9	
25	4/8/2014 14:02	0	0	0	0	20.9	
26	4/8/2014 14:17	0	0	0	0	20.9	
27	4/8/2014 14:32	0	0	0	0	20.9	
28	4/8/2014 14:47	0	0	0.1	0	20.9	
29	4/8/2014 15:02	0	0	0.1	0	20.9	
30	4/8/2014 15:17	0	0	0	0	20.9	
31	4/8/2014 15:32	0	0	0	0	20.9	
32	4/8/2014 15:47	0	0	0	0	20.9	
33	4/8/2014 16:02	0	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

April 9, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Particulate Air Monitoring Data Ellisville RV007
April 9, 2014

Ellisville (RV007) Up wind PM-10 Data April 9, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	8.6	12.6	60	0.6608	9:34:11	9-Apr-14
2	16.5	16	46	0.61	9:49:11	9-Apr-14
3	4.4	18.7	37	0.4886	10:04:11	9-Apr-14
4	3.5	20.8	30	0.5114	10:19:11	9-Apr-14
5	7.4	22.4	27	0.905	10:34:11	9-Apr-14
6	6.6	23.7	24	1.0837	10:49:11	9-Apr-14
7	5.3	24.5	22	0.9407	11:04:11	9-Apr-14
8	6.4	25.3	21	1.1098	11:19:11	9-Apr-14
9	2.6	26	20	0.3791	11:34:11	9-Apr-14
10	2.6	26.9	19	0.4175	11:49:11	9-Apr-14
11	2.9	27.6	18	0.559	12:04:11	9-Apr-14
12	2.6	27.4	17	0.5685	12:19:11	9-Apr-14
13	3.7	25.6	18	0.6366	12:34:11	9-Apr-14
14	4	24.6	19	0.5394	12:49:11	9-Apr-14
15	6.6	23.2	19	0.751	13:04:11	9-Apr-14
16	10.8	21.8	21	0.8783	13:19:11	9-Apr-14
17	7.5	20.8	22	0.6683	13:34:11	9-Apr-14
18	5.1	20.1	23	0.487	13:49:11	9-Apr-14
19	7.4	20.1	23	0.5153	14:04:11	9-Apr-14
20	6	21.2	22	0.5673	14:19:11	9-Apr-14
21	5	23.6	20	0.619	14:34:11	9-Apr-14
22	5	25.8	18	0.6766	14:49:11	9-Apr-14
23	4.9	27.6	16	0.7057	15:04:11	9-Apr-14
24	3.5	28.7	15	0.5752	15:19:11	9-Apr-14
25	3.9	29.4	14	0.9214	15:34:11	9-Apr-14
26	7.3	29.9	13	1.1621	15:49:11	9-Apr-14
27	1.8	30.2	13	0.4603	16:04:11	9-Apr-14
28	2.4	30.1	12	0.6182	16:19:11	9-Apr-14
29	5	29.5	13	0.9067	16:34:11	9-Apr-14

Particulate Air Monitoring Data Ellisville RV007
April 9, 2014

Ellisville (RV007) Down wind PM-10 Data EA3 April 9, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	10.3	14.7	56	1.2361	9:33:24	9-Apr-14
2	13	14.6	49	1.1968	9:48:24	9-Apr-14
3	8.8	14.5	47	1.2113	10:03:24	9-Apr-14
4	8.1	14.6	44	1.1786	10:18:24	9-Apr-14
5	8.8	14.8	43	1.2191	10:33:24	9-Apr-14
6	9	15.1	42	1.2739	10:48:24	9-Apr-14
7	7.4	15.4	41	1.2667	11:03:24	9-Apr-14
8	7.6	15.9	39	1.2063	11:18:24	9-Apr-14
9	8.5	16.3	38	1.3292	11:33:24	9-Apr-14
10	7.6	16.8	37	0.9897	11:48:24	9-Apr-14
11	7.9	17.2	37	1.1734	12:03:24	9-Apr-14
12	7.4	17.7	35	1.1545	12:18:24	9-Apr-14
13	7.8	18.4	34	1.0275	12:33:24	9-Apr-14
14	8.2	19	32	1.1046	12:48:24	9-Apr-14
15	8.9	19.4	31	0.9713	13:03:24	9-Apr-14
16	8.8	19.9	30	1.0048	13:18:24	9-Apr-14
17	9.9	20.4	30	1.1282	13:33:24	9-Apr-14
18	8.4	21	28	0.8678	13:48:24	9-Apr-14
19	9.4	21.6	27	1.0103	14:03:24	9-Apr-14
20	9.2	22.4	26	1.0005	14:18:24	9-Apr-14
21	8.2	23.5	25	1.1228	14:33:24	9-Apr-14
22	9.9	24.5	24	1.7368	14:48:24	9-Apr-14
23	7.1	26.1	23	0.9764	15:03:24	9-Apr-14
24	7.4	27.5	21	1.2349	15:18:24	9-Apr-14
25	7.4	27.2	20	1.6856	15:33:24	9-Apr-14
26	11	27	20	0.9265	15:48:24	9-Apr-14
27	7.2	26.5	20	1.2097	16:03:24	9-Apr-14
28	5.9	25.8	20	1.3094	16:18:24	9-Apr-14
29	5.4	26	20	0.9084	16:33:24	9-Apr-14

PID (VOC) results Ellisville (RV007)

April 9, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

PID (VOC) results Ellisville RV007
April 9, 2014

Ellisville (RV007) Downwind PID Data EA3 UW April 9, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	4/9/2014 9:17	0.3		0		0		20.9	
2	4/9/2014 9:32	0.1		0		0		20.9	
3	4/9/2014 9:47	0		0		0		20.9	
4	4/9/2014 10:02	0		0		0		20.9	
5	4/9/2014 10:17	0.1		0		0		21.1	
6	4/9/2014 10:32	0		0		0		21.2	
7	4/9/2014 10:47	0		0		0		21.2	
8	4/9/2014 11:02	0.1		0		0		21.2	
9	4/9/2014 11:17	0.1		0		0		21.1	
10	4/9/2014 11:32	0		0		0		21.1	
11	4/9/2014 11:47	0		0		0		21.1	
12	4/9/2014 12:02	0		0		0		21.1	
13	4/9/2014 12:17	0		0		0		21.1	
14	4/9/2014 12:32	0		0		0		21.1	
15	4/9/2014 12:47	0		0		0		21.1	
16	4/9/2014 13:02	0		0		0		21.1	
17	4/9/2014 13:17	0		0		0		21.1	
18	4/9/2014 13:32	0.1		0		0		21.1	
19	4/9/2014 13:47	0.1		0		0		21.1	
20	4/9/2014 14:02	0.1		0		0		20.9	
21	4/9/2014 14:17	0.2		0		0		20.9	
22	4/9/2014 14:32	0.2		0		0		20.9	
23	4/9/2014 14:47	0.3		0		0		20.9	
24	4/9/2014 15:02	0.3		0		0		20.9	
25	4/9/2014 15:17	0.5		0		0		21	
26	4/9/2014 15:32	0.4		0		0		21.3	
27	4/9/2014 15:47	0.3		0		0		21.2	
28	4/9/2014 16:02	0.2		0		0		21.2	
29	4/9/2014 16:17	0.2		0		0		21.2	

PID (VOC) results Ellisville RV007
April 9, 2014

Ellisville (RV007) Upwind PID Data EA3 UW April 9, 2014

Line#	Date Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	4/9/2014 9:19	0.3		0		0		0		20.9	
2	4/9/2014 9:34	0.1		0		0		0		21.2	
3	4/9/2014 9:49	0		0		0		0		21.2	
4	4/9/2014 11:57	0		0		0		0		21.5	
5	4/9/2014 12:12	0		0		0		0		21.5	
6	4/9/2014 12:27	0		0		0		0		21.4	
9	4/9/2014 15:11	0.1		0		0		0		21.8	
10	4/9/2014 15:26	0.1		0		0		0		21.8	
11	4/9/2014 15:41	0.1		0		0		0		21.8	

Particulate Air Monitoring Data Ellisville (RV007)

April 10, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Particulate Air Monitoring Data Ellisville RV007
April 10, 2014

Ellisville (RV007) Up wind PM-10 Data April 10, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	8.5	32.8	24	0.5729	13:19:23	10-Apr-14
2	11.2	34.6	21	0.7713	13:34:23	10-Apr-14
3	12.2	35.8	19	0.6787	13:49:23	10-Apr-14
4	12.2	36	19	0.8234	14:04:23	10-Apr-14
5	11.7	36.7	19	0.8263	14:19:23	10-Apr-14
6	9.1	37.4	18	0.6058	14:34:23	10-Apr-14
7	9.5	37.4	18	0.7144	14:49:23	10-Apr-14
8	15.3	37.1	19	0.7995	15:04:23	10-Apr-14
9	7.7	37.9	18	0.6033	15:19:23	10-Apr-14
10	7.9	37.8	18	0.5898	15:34:23	10-Apr-14
11	8.3	36.3	20	0.5905	15:49:23	10-Apr-14
12	9.4	34.4	22	0.6631	16:04:23	10-Apr-14
13	9.7	32.7	24	0.6264	16:19:23	10-Apr-14
14	10.8	31.4	26	0.6101	16:34:23	10-Apr-14
15	12.8	30.1	27	0.5205	16:49:23	10-Apr-14

Ellisville (RV007) Down wind PM-10 Data EA3 April 10, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	10.2	32.8	21	0.7296	13:43:45	10-Apr-14
2	6.8	32.9	19	0.8252	13:58:45	10-Apr-14
3	6.8	33.2	19	0.8334	14:13:45	10-Apr-14
4	6.8	33.7	19	0.779	14:28:45	10-Apr-14
5	13.6	33.9	19	1.2866	14:43:45	10-Apr-14
6	8.9	33.9	19	1.0126	14:58:45	10-Apr-14
7	8.2	34.5	19	0.9344	15:13:45	10-Apr-14
8	21.9	34.7	18	1.6743	15:28:45	10-Apr-14
9	9.6	33.8	19	1.0194	15:43:45	10-Apr-14
10	8.8	32.4	21	0.8479	15:58:45	10-Apr-14
11	9.6	30.8	23	0.9436	16:13:45	10-Apr-14
12	14	29.6	25	1.2783	16:28:45	10-Apr-14
13	12	29.1	26	0.6921	16:43:45	10-Apr-14

PID (VOC) results Ellisville (RV007)

April 10, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

PID (VOC) results Ellisville RV007
April 10, 2014

Ellisville (RV007) Upwind PID Data EA3 UW April 10, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	4/10/2014 13:30	0.8	0	5.8	0	20.9
2	4/10/2014 13:45	0.7	0	5.8	0	20.9
3	4/10/2014 14:00	0.8	0	5.5	0	20.9
4	4/10/2014 14:15	0.7	0	5.3	0	20.9
5	4/10/2014 14:30	0.7	0	5	0	20.9
6	4/10/2014 14:45	0.6	0	4.7	0	20.9
7	4/10/2014 15:00	0.6	0	4.9	0	20.9
8	4/10/2014 15:15	0.6	0	4.3	0	21.2
9	4/10/2014 15:30	0.3	0	3	0	21.2
10	4/10/2014 15:45	0.1	0	1.4	0	21.3
11	4/10/2014 16:00	0	0	0.4	0	21.2
12	4/10/2014 16:15	0	0	0.1	0	21.2
13	4/10/2014 16:30	0	0	0	0	21.1

Ellisville (RV007) Downwind PID Data EA3 DW April 10, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	4/10/2014 13:04	0.9	0	0.3	0	20.9
2	4/10/2014 13:19	1.8	0	0.3	0	20.9
3	4/10/2014 13:34	2.4	0	0.2	0	21
4	4/10/2014 13:49	2.5	0	0.2	0	21.2
5	4/10/2014 14:04	2.7	0	0.2	0	21.2
6	4/10/2014 14:19	3	0	0.2	0	21.3
7	4/10/2014 14:34	3.6	0	0.2	0	21.3
8	4/10/2014 14:49	3.1	0	0.2	0	21.3
9	4/10/2014 15:04	3.9	0	0.2	0	21.3
10	4/10/2014 15:19	4.5	0	0.1	0	21.3
11	4/10/2014 15:34	3.3	0	0	0	21.4
12	4/10/2014 15:49	2.2	0	0	0	21.3
13	4/10/2014 16:04	1.4	0	0	0	21.3
14	4/10/2014 16:19	0.8	0	0	0	21.3
15	4/10/2014 16:34	0.5	0	0	0	21.3

Particulate Air Monitoring Data Ellisville (RV007)

April 11, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Particulate Air Monitoring Data Ellisville RV007
April 11, 2014

Ellisville (RV007) Up wind PM-10 Data April 11, 2014

record	(MASS) $\mu\text{g}/\text{m}^3$	Temp	RHumidity	Diameter	time	date
1	10.1	16.7	30	3.7309	8:54:44	11-Apr-14
2	9.6	17.9	31	4.0576	9:09:44	11-Apr-14
3	9.1	19.8	29	3.9625	9:24:44	11-Apr-14
4	8.7	21.1	27	3.7234	9:39:44	11-Apr-14
5	8.6	22.4	25	3.6134	9:54:44	11-Apr-14
6	7.8	23.6	24	3.8985	10:09:44	11-Apr-14
7	7.8	25.1	22	3.3637	10:24:44	11-Apr-14
8	7.9	26	21	3.3936	10:39:44	11-Apr-14
9	8.6	27.3	20	3.59	10:54:44	11-Apr-14
10	9.7	27.8	19	2.9971	11:09:44	11-Apr-14
11	10.2	27.4	19	3.1759	11:24:44	11-Apr-14
12	8.6	27.2	19	3.5195	11:39:44	11-Apr-14
13	8.2	27.2	19	3.42	11:54:44	11-Apr-14
14	7.9	27.1	19	3.3366	12:09:44	11-Apr-14
15	7.9	27.4	19	3.3078	12:24:44	11-Apr-14
16	7.8	27.8	18	2.9827	12:39:44	11-Apr-14
17	8.3	28.2	18	3.196	12:54:44	11-Apr-14
18	14.1	27.8	18	3.509	13:09:44	11-Apr-14
19	7.4	27.3	18	2.8621	13:24:44	11-Apr-14
20	9	27.6	19	3.0799	13:39:44	11-Apr-14
21	8.9	29.2	18	3.0165	13:54:44	11-Apr-14
22	7.4	31.2	17	2.558	14:09:44	11-Apr-14
23	8	32.6	16	3.1941	14:24:44	11-Apr-14
24	7.6	33.5	15	3.4554	14:39:44	11-Apr-14
25	6.7	33.6	15	3.2116	14:54:44	11-Apr-14
26	7.1	34.4	15	3.5311	15:09:44	11-Apr-14
27	6.2	34.7	15	2.8525	15:24:44	11-Apr-14
28	6	34.6	14	2.7022	15:39:44	11-Apr-14
29	6.1	34.3	14	2.8571	15:54:44	11-Apr-14

Particulate Air Monitoring Date Ellisville RV007
April 11, 2014

Ellisville (RV007) Down wind PM-10 Data EA3 April 11, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	8	15.6	25	1.2596	0:15:33	25-Jan-00
2	8.3	16.7	28	1.4923	0:30:33	25-Jan-00
3	5.2	17.5	28	0.9116	0:45:33	25-Jan-00
4	6.1	18.1	27	1.3173	1:00:33	25-Jan-00
5	9.1	18.5	25	1.7828	1:15:33	25-Jan-00
6	6.5	18.7	25	1.7181	1:30:33	25-Jan-00
7	7.5	19.4	24	1.9368	1:45:33	25-Jan-00
8	4.9	19.7	23	0.9064	2:00:33	25-Jan-00
9	5.8	20	23	1.168	2:15:33	25-Jan-00
10	6	20.3	22	1.1193	2:30:33	25-Jan-00
11	5.7	20.6	22	1.3109	2:45:33	25-Jan-00
12	4.9	20.9	22	1.2979	3:00:33	25-Jan-00
13	5	21.3	21	1.3148	3:15:33	25-Jan-00
14	4.5	21.5	21	1.2347	3:30:33	25-Jan-00
15	5	22	20	1.3056	3:45:33	25-Jan-00
16	5.2	22.5	20	1.4554	4:00:33	25-Jan-00
17	11.6	23	20	2.0122	4:15:33	25-Jan-00
18	12.2	23.2	19	1.79	4:30:33	25-Jan-00

PID (VOC) results Ellisville (RV007)

April 11, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

PID (VOC) results Ellisville RV007
April 11, 2014

Ellisville (RV007) Upwind PID Data EA3 UW April 11, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	H2S Alarm	LEL (%)	LEL Alarm	OXY (%)	OXY Alarm
1	4/11/2014 8:40	0.1		0		0		20.9	
2	4/11/2014 8:55	0.1		0		0		20.9	
3	4/11/2014 9:10	0.1		0		0		20.9	
4	4/11/2014 9:25	0.2		0		0		20.9	
5	4/11/2014 9:40	0.2		0		0		20.9	
6	4/11/2014 9:55	0.2		0		0		20.9	
7	4/11/2014 10:10	0.3		0		0		20.9	
8	4/11/2014 10:25	0.3		0		0		20.9	
9	4/11/2014 10:40	0.5		0		0		20.9	
10	4/11/2014 10:55	0.5		0		0		20.9	
11	4/11/2014 11:10	0.4		0		0		21.2	
12	4/11/2014 11:25	0.2		0		0		21.2	
13	4/11/2014 11:40	0.2		0		0		21.2	
14	4/11/2014 11:55	0.2		0		0		21.2	
15	4/11/2014 12:10	0.2		0		0		21.2	
16	4/11/2014 12:25	0.2		0		0		21.2	
17	4/11/2014 12:40	0.3		0		0		21.2	
18	4/11/2014 12:55	0.3		0		0		21.3	
19	4/11/2014 13:10	0.2		0		0		21.3	
20	4/11/2014 13:25	0.1		0		0		21.2	
21	4/11/2014 13:40	0.1		0		0		21.2	
22	4/11/2014 13:55	0.3		0		0		21.2	
23	4/11/2014 14:10	0.5		0		0		21.2	
24	4/11/2014 14:25	1.2		0		0		21.3	
25	4/11/2014 14:40	1.1		0		0		21.3	
26	4/11/2014 14:55	1.6		0		0		21.3	
27	4/11/2014 15:10	2.1		0		0		21.3	
28	4/11/2014 15:25	2.4		0	0.1	0		21.4	
29	4/11/2014 15:40	3.1		0	0.1	0		21.4	

Particulate Air Monitoring Data Ellisville (RV007)

April 17, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Particulate Air Monitoring Data Ellisville RV007
April 17, 2014

Ellisville (RV007) Up Wind PM-10 Data April 17, 2014

record	(MASS) ug/m3	Temp	RHumidity	Diameter	Time	Date
1	12.1	27.7	26	0.4689	14:36:10	17-Apr-14
2	11.1	28.3	24	0.4273	14:51:10	17-Apr-14
3	10.9	28.6	23	0.4457	15:06:10	17-Apr-14
4	10.1	29.3	22	0.4276	15:21:10	17-Apr-14
5	11	28.9	22	0.4806	15:36:10	17-Apr-14
6	9.7	29.5	22	0.4119	15:51:10	17-Apr-14
7	9.2	28.9	22	0.3994	16:06:10	17-Apr-14
8	9.6	28	23	0.4134	16:21:10	17-Apr-14
9	9.1	27.3	24	0.4236	16:36:10	17-Apr-14

Ellisville (RV007) Down Wind PM-10 Data April 17, 2014

record	(MASS) ug/m3	Temp	RHumidity	Diameter	Time	Date
1	10.6	26.4	25	0.5257	14:45:40	17-Apr-14
2	9.5	26.6	22	0.5181	15:00:40	17-Apr-14
3	9.1	27	21	0.4856	15:15:40	17-Apr-14
4	8.6	26.8	21	0.5	15:30:40	17-Apr-14
5	8.2	26.5	21	0.4762	15:45:40	17-Apr-14
6	9.4	26.2	22	0.534	16:00:40	17-Apr-14
7	8.3	25.7	23	0.4941	16:15:40	17-Apr-14
8	8.9	25.2	23	0.5107	16:30:40	17-Apr-14

PID (VOC) results Ellisville (RV007)

April 17, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

PID (VOC) results Ellisville RV007
April 17, 2014

Ellisville (RV007) Upwind PID Data EA3 UW April 17, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	4/17/2014	14:20	0		0		0.2		0		20.9	
2	4/17/2014	14:35	0.1		0		0.1		0		20.9	
3	4/17/2014	14:50	0.1		0		0.1		0		20.9	
4	4/17/2014	15:05	0.2		0		0		0		20.9	
5	4/17/2014	15:20	0.1		0		0		0		20.9	
6	4/17/2014	15:35	0.1		0		0		0		20.9	
7	4/17/2014	15:50	0.1		0		0		0		20.9	
8	4/17/2014	16:05	0		0		0		0		20.9	
9	4/17/2014	16:20	0		0		0		0		20.9	

Ellisville (RV007) Downwind PID Data EA3 DW April 17, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	4/17/2014	14:30	0.6		0		0		0		20.9	
2	4/17/2014	14:45	0.5		0		0		0		20.9	
3	4/17/2014	15:00	0.5		0		0		0		20.9	
4	4/17/2014	15:15	0.4		0		0		0		20.9	
5	4/17/2014	15:30	0.2		0		0		0		20.9	
6	4/17/2014	15:45	0.1		0		0		0		20.9	
7	4/17/2014	16:00	0		0		0		0		20.9	
8	4/17/2014	16:15	0		0		0		0		20.9	
9	4/17/2014	16:30	0		0		0		0		20.9	

Particulate Air Monitoring Data Ellisville (RV007)

April 21, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up wind PM-10 Data April 21, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	24.1	22.7	45	0.4549	11:44:07	21-Apr-14
2	22.9	23.6	53	0.4631	11:59:07	21-Apr-14
3	22.4	24.8	50	0.4615	12:14:07	21-Apr-14
4	22.6	25.6	48	0.4595	12:29:07	21-Apr-14
5	21.8	26.2	46	0.4681	12:44:07	21-Apr-14
6	20.4	26.9	44	0.448	12:59:07	21-Apr-14
7	19.9	27.6	42	0.4574	13:14:07	21-Apr-14
8	19	27.9	41	0.4415	13:29:07	21-Apr-14
9	17.2	28.3	39	0.4502	13:44:07	21-Apr-14
10	17.9	28.7	38	0.4585	13:59:07	21-Apr-14
11	15.6	29.2	37	0.4752	14:14:07	21-Apr-14
12	14.6	29.3	37	0.4339	14:29:07	21-Apr-14
13	14.7	29	37	0.4356	14:44:07	21-Apr-14
14	16.3	29.1	37	0.4831	14:59:07	21-Apr-14
15	13.7	29.1	36	0.442	15:14:07	21-Apr-14
16	14	28.6	37	0.4377	15:29:07	21-Apr-14
17	14.6	27.8	39	0.4478	15:44:07	21-Apr-14
18	15.3	26.9	41	0.4435	15:59:07	21-Apr-14
19	20.8	26	45	0.5388	16:14:07	21-Apr-14
20	18.5	25.3	48	0.4775	16:29:07	21-Apr-14
21	16.8	25	48	0.4457	16:44:07	21-Apr-14
22	15.3	25.2	47	0.438	16:59:07	21-Apr-14

Ellisville (RV007) Down Wind PM-10 Data April 21, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	24.5	22.2	48	0.5448	11:41:48	21-Apr-14
2	23.8	22.2	55	0.547	11:56:48	21-Apr-14
3	23.4	22.6	55	0.5374	12:11:48	21-Apr-14
4	24.2	23	53	0.5659	12:26:48	21-Apr-14
5	23.1	23.4	53	0.5544	12:41:48	21-Apr-14
6	23.3	23.9	51	0.554	12:56:48	21-Apr-14
7	20.7	24.4	49	0.5439	13:11:48	21-Apr-14
8	17.8	24.9	47	0.4932	13:26:48	21-Apr-14
9	18.4	25.3	45	0.582	13:41:48	21-Apr-14
10	17.9	25.6	44	0.532	13:56:48	21-Apr-14
11	16	25.9	43	0.5173	14:11:48	21-Apr-14
12	14.5	26.1	42	0.51	14:26:48	21-Apr-14
13	14.2	26.1	42	0.5149	14:41:48	21-Apr-14
14	15.3	26.2	42	0.4743	14:56:48	21-Apr-14
15	12.8	26.3	41	0.4548	15:12:25	21-Apr-14
16	14.5	26.2	42	0.5916	15:27:25	21-Apr-14
17	13.8	25.8	44	0.4926	15:42:25	21-Apr-14
18	15.5	25.2	47	0.5466	15:57:25	21-Apr-14
19	16.3	24.6	52	0.5163	16:12:25	21-Apr-14
20	18.7	23.9	55	0.5693	16:27:25	21-Apr-14
21	18.2	23.5	55	0.5596	16:42:25	21-Apr-14
22	15.8	23.6	52	0.5258	16:57:25	21-Apr-14

PID (VOC) results Ellisville (RV007)

April 21, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

PID (VOC) results Ellisville RV007
April 21, 2014

Ellisville (RV007) Upwind PID Data EA3 UW April 21, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY (%)	Alarm
1	4/21/2014 11:28	0.4	0	0	0	20.9	
2	4/21/2014 11:43	0.1	0	0	0	20.9	
3	4/21/2014 11:58	0.2	0	0	0	20.9	
4	4/21/2014 12:13	0.2	0	0	0	20.9	
5	4/21/2014 12:28	0.1	0	0	0	20.9	
6	4/21/2014 12:43	0	0	0	0	20.9	
7	4/21/2014 12:58	0.1	0	0	0	20.9	
8	4/21/2014 13:13	0.1	0	0	0	20.9	
9	4/21/2014 13:28	0.1	0	0	0	20.9	
10	4/21/2014 13:43	0.1	0	0	0	20.9	
11	4/21/2014 13:58	0.1	0	0	0	20.9	
12	4/21/2014 14:13	0.1	0	0	0	20.9	
13	4/21/2014 14:28	0.1	0	0	0	20.9	
14	4/21/2014 14:43	0.1	0	0	0	20.9	
15	4/21/2014 14:58	0.1	0	0	0	20.9	
16	4/21/2014 15:13	0.1	0	0	0	20.9	
17	4/21/2014 15:28	0	0	0	0	20.9	
18	4/21/2014 15:43	0	0	0	0	20.9	
19	4/21/2014 15:58	0	0	0	0	20.9	
20	4/21/2014 16:13	0	0	0	0	20.9	
21	4/21/2014 16:28	0	0	0	0	20.9	
22	4/21/2014 16:43	0	0	0	0	20.9	

PID (VOC) results Ellisville RV007
April 21, 2014

Ellisville (RV007) Downwind PID Data EA3 UW April 21, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	4/21/2014 11:31	2.1	0	0	0	0	20.9		
2	4/21/2014 11:46	1.4	0	0	0	0	20.9		
3	4/21/2014 12:01	1.2	0	0	0	0	20.9		
4	4/21/2014 12:16	1	0	0	0	0	20.9		
5	4/21/2014 12:31	0.8	0	0	0	0	20.9		
6	4/21/2014 12:46	0.7	0	0	0	0	20.9		
7	4/21/2014 13:01	0.6	0	0	0	0	20.9		
8	4/21/2014 13:16	0.5	0	0	0	0	20.9		
9	4/21/2014 13:31	0.5	0	0	0	0	20.9		
10	4/21/2014 13:46	0.4	0	0	0	0	20.9		
11	4/21/2014 14:01	0.3	0	0	0	0	20.9		
12	4/21/2014 14:16	0.3	0	0	0	0	20.9		
13	4/21/2014 14:31	0.1	0	0	0	0	20.9		
14	4/21/2014 14:46	0.1	0	0	0	0	20.9		
15	4/21/2014 15:01	0.1	0	0	0	0	20.9		
16	4/21/2014 15:16	0.1	0	0	0	0	20.9		
17	4/21/2014 15:31	0.1	0	0	0	0	20.9		
18	4/21/2014 15:46	0.1	0	0	0	0	20.9		
19	4/21/2014 16:01	0	0	0	0	0	20.9		
20	4/21/2014 16:16	0.1	0	0	0	0	20.9		
21	4/21/2014 16:31	0	0	0	0	0	20.9		

Particulate Air Monitoring Data Ellisville (RV007)

April 23, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Particulate Air Monitoring Data Ellisville RV007
April 23, 2014

Ellisville (RV007) Up wind PM-10 Data April 23, 2014

record	(MASS) ug/m3	Temp	RHumidity	Diameter	time	date
1	17.8	16.1	39	0.9489	9:54:05	23-Apr-14
2	17.5	15.9	42	0.8997	10:09:05	23-Apr-14
3	18	15.8	43	0.929	10:24:05	23-Apr-14
4	18.5	16	44	0.9505	10:39:05	23-Apr-14
5	19.1	16.1	44	0.9173	10:54:05	23-Apr-14
6	18.9	16.3	44	0.9291	11:09:05	23-Apr-14
7	17.3	16.7	44	0.8397	11:24:05	23-Apr-14
8	16.9	17.2	43	0.8149	11:39:05	23-Apr-14
9	17	17.6	42	0.7918	11:54:05	23-Apr-14
10	17	17.9	42	0.8164	12:09:05	23-Apr-14
11	16.7	18.3	41	0.7946	12:24:05	23-Apr-14
12	16.1	18.8	40	0.8301	12:39:05	23-Apr-14
13	15.7	19.5	39	0.7993	12:54:05	23-Apr-14
14	16.6	19.8	37	0.7536	13:09:05	23-Apr-14
15	16.8	20.5	37	0.7453	13:24:05	23-Apr-14
16	16.3	20.9	36	0.7089	13:39:05	23-Apr-14
17	16.1	21	36	0.6967	13:54:05	23-Apr-14
18	14.8	21.3	35	0.8184	14:09:05	23-Apr-14
19	13.5	21.5	33	0.7415	14:24:05	23-Apr-14
20	13.7	21.4	33	0.7941	14:39:05	23-Apr-14
21	14.2	21.1	33	0.798	14:54:05	23-Apr-14
22	14	21	33	0.8422	15:09:05	23-Apr-14
23	13.7	20.8	34	0.8183	15:24:05	23-Apr-14
24	13.4	20.3	34	0.823	15:39:05	23-Apr-14
25	16.2	19.8	35	1.0099	15:54:05	23-Apr-14
26	14.4	19.7	36	0.8381	16:09:05	23-Apr-14
27	13	19.6	36	0.8693	16:24:05	23-Apr-14
28	12.6	19.4	36	0.8803	16:39:05	23-Apr-14
29	15	19.2	36	0.7909	16:54:05	23-Apr-14
30	10.3	19.1	36	0.7256	17:09:05	23-Apr-14

Particulate Air Monitoring Data Ellisville RV007
April 23, 2014

Ellisville (RV007) Down Wind PM-10 Data April 23, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	22.7	16.8	38	0.9905	10:00:34	23-Apr-14
2	21.8	19.4	37	0.9316	10:15:34	23-Apr-14
3	23.4	21.6	33	0.8541	10:30:34	23-Apr-14
4	27.5	23	31	0.9945	10:45:34	23-Apr-14
5	24.8	23.9	30	0.8304	11:00:34	23-Apr-14
6	23.9	24.5	29	0.9201	11:15:34	23-Apr-14
7	20.3	24.8	28	0.8038	11:30:34	23-Apr-14
8	20.2	24	28	0.806	11:45:34	23-Apr-14
9	20.7	22.9	30	0.8263	12:00:34	23-Apr-14
10	20.9	22.5	31	0.8128	12:15:34	23-Apr-14
11	22.4	22.8	30	0.7897	12:30:34	23-Apr-14
12	23.4	23.7	29	0.7686	12:45:34	23-Apr-14
13	29.9	24.5	28	0.7394	13:00:34	23-Apr-14
14	21.5	25.1	27	0.7572	13:15:34	23-Apr-14
15	21.5	26.8	26	0.7134	13:30:34	23-Apr-14
16	23.2	28.2	25	0.7216	13:45:34	23-Apr-14
17	18.6	29.1	24	0.7097	14:00:34	23-Apr-14
18	17.4	28.4	23	0.6917	14:15:34	23-Apr-14
19	19.6	27.5	23	0.8499	14:30:34	23-Apr-14
20	23.5	26	24	0.76	14:45:34	23-Apr-14
21	24.6	24.5	26	1.1145	15:00:34	23-Apr-14
22	19.4	23.6	27	0.865	15:15:34	23-Apr-14
23	26.7	22.7	28	0.9387	15:30:34	23-Apr-14
24	26.9	21.6	30	0.77	15:45:34	23-Apr-14
25	21.2	21	31	0.8283	16:00:34	23-Apr-14
26	22.2	20.8	32	0.8999	16:15:34	23-Apr-14
27	19.5	20.6	32	0.8484	16:30:34	23-Apr-14
28	16.8	20.3	32	0.8041	16:45:34	23-Apr-14
29	18.1	20.1	33	1.0012	17:00:34	23-Apr-14

PID (VOC) results Ellisville (RV007)

April 23, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

PID (VOC) results Ellisville RV007
 April 23, 2014

Ellisville (RV007) Upwind PID Data EA3 UW April 23, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY (%)	Alarm
1	4/23/2014 9:38	0	0	0	0	20.4	
2	4/23/2014 9:53	0	0	0	0	20.5	
3	4/23/2014 10:08	0	0	0	0	20.5	
4	4/23/2014 10:23	0	0	0	0	20.5	
5	4/23/2014 10:38	0	0	0	0	20.6	
6	4/23/2014 10:53	0	0	0	0	20.6	
7	4/23/2014 11:08	0	0	0	0	20.6	
8	4/23/2014 11:23	0	0	0	0	20.6	
9	4/23/2014 11:38	0	0	0	0	20.6	
10	4/23/2014 11:53	0	0	0	0	20.6	
11	4/23/2014 12:08	0	0	0	0	20.6	
12	4/23/2014 12:23	0	0	0	0	20.6	
13	4/23/2014 12:38	0	0	0	0	20.7	
14	4/23/2014 12:53	0	0	0	0	20.9	
15	4/23/2014 13:08	0	0	0	0	20.9	
16	4/23/2014 13:23	0	0	0	0	20.9	
17	4/23/2014 13:38	0	0	0	0	20.9	
18	4/23/2014 13:53	0	0	0	0	20.9	
19	4/23/2014 14:08	0	0	0	0	20.9	
20	4/23/2014 14:23	0	0	0	0	20.9	
21	4/23/2014 14:38	0	0	0	0	20.9	
22	4/23/2014 14:53	0	0	0	0	20.9	
23	4/23/2014 15:08	0	0	0	0	20.9	
24	4/23/2014 15:23	0	0	0	0	20.9	
25	4/23/2014 15:38	0	0	0	0	20.9	
26	4/23/2014 15:53	0	0	0	0	20.9	

PID (VOC) results Ellisville RV007
April 23, 2014

Ellisville (RV007) Downwind PID Data EA3 UW April 23, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY (%)	Alarm
1	4/23/2014 9:44	1.1	0.3	0.1	0	20.3	
2	4/23/2014 9:59	1.1	0.2	0.9	0	20.4	
3	4/23/2014 10:14	1.1	0.1	1.3	0	20.5	
4	4/23/2014 10:29	1.2	0	1.2	0	20.5	
5	4/23/2014 10:44	1.2	0	0.7	0	20.6	
6	4/23/2014 10:59	0.9	0	0.2	0	20.8	
7	4/23/2014 11:14	0.7	0	0	0	20.9	
8	4/23/2014 11:29	0.4	0	0	0	20.9	
9	4/23/2014 11:44	0.2	0	0	0	20.9	
10	4/23/2014 11:59	0.1	0	0	0	20.9	
11	4/23/2014 12:14	0.1	0	0	0	20.9	
12	4/23/2014 12:29	0.1	0	0	0	20.9	
13	4/23/2014 12:44	0.2	0	0	0	20.9	
14	4/23/2014 12:59	0.1	0	0	0	20.9	
15	4/23/2014 13:14	0.2	0	0	0	20.9	
16	4/23/2014 13:29	0.3	0	0	0	20.9	
17	4/23/2014 13:44	0.4	0	0	0	20.9	
18	4/23/2014 13:59	0.3	0	0	0	20.9	
19	4/23/2014 14:14	0.2	0	0	0	20.9	
20	4/23/2014 14:29	0.2	0	0	0	20.9	
21	4/23/2014 14:44	0.1	0	0	0	20.9	
22	4/23/2014 14:59	0	0	0	0	20.9	
23	4/23/2014 15:14	0.1	0	0	0	20.9	
24	4/23/2014 15:29	0.1	0	0	0	20.9	
25	4/23/2014 15:44	0.1	0	0	0	20.9	
26	4/23/2014 15:59	0.1	0.1	0	0	20.9	
27	4/23/2014 16:14	0.1	0.1	0	0	20.9	
28	4/23/2014 16:29	0.1	0.1	0	0	20.9	
29	4/23/2014 16:44	0.1	0.1	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

April 24, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up wind PM-10 Data April 24, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	15.6	27.3	35	0.4978	16:25:36	24-Apr-14
2	14.2	27.2	34	0.4534	16:40:36	24-Apr-14

Ellisville (RV007) Down Wind PM-10 Data April 24, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	16.1	26.8	35	0.6341	16:01:19	24-Apr-14
2	14.5	27.2	33	0.6111	16:16:19	24-Apr-14
3	14.1	27	33	0.5549	16:31:19	24-Apr-14
4	15.6	26.6	33	0.5841	16:46:19	24-Apr-14

PID (VOC) results Ellisville (RV007)

April 24, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data EA3 UW April 24, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm (ppm)	H2S Alarm (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	4/24/2014	15:42	2.4	0	0.5	0	20.5	
2	4/24/2014	15:57	2.3	0	1	0	20.6	
3	4/24/2014	16:12	2.1	0	0.8	0	20.6	
4	4/24/2014	16:27	1.9	0	0.4	0	20.8	

Ellisville (RV007) Downwind PID Data EA3 UW April 24, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm (ppm)	H2S Alarm (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	4/24/2014	15:57	0.3	0	0.2	0	20.9	
2	4/24/2014	16:12	0.4	0	0.1	0	20.9	
3	4/24/2014	16:27	0.2	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

April 25, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up wind PM-10 Data April 25, 2014

record	(MASS) ug/m3	Temp	RHumidity	Diameter	time	date
1	4.6	23.3	33	0.6825	12:46:21	25-Apr-14
2	4	23.9	33	0.6228	13:01:21	25-Apr-14
3	3.9	24.4	32	0.5384	13:16:21	25-Apr-14
4	10.4	24.9	31	0.9956	13:31:21	25-Apr-14
5	5.8	25.4	30	1.0847	13:46:21	25-Apr-14
6	2.2	25.7	28	0.5155	14:01:21	25-Apr-14
7	4.7	26	28	0.6245	14:16:21	25-Apr-14
8	9.2	26.5	26	1.295	14:31:21	25-Apr-14
9	4.5	26.9	26	1.0247	14:46:21	25-Apr-14
10	6.2	27.2	25	1.1063	15:01:21	25-Apr-14
11	3	27.6	24	0.5061	15:16:21	25-Apr-14
12	3.9	27.9	22	0.8601	15:31:21	25-Apr-14
13	1.7	28.1	21	0.5028	15:46:21	25-Apr-14
14	3.5	28.3	21	0.564	16:01:21	25-Apr-14
15	1.5	28.4	22	0.6291	16:16:21	25-Apr-14
16	3	28.5	21	0.738	16:31:21	25-Apr-14
17	1.4	28.6	22	0.486	16:46:21	25-Apr-14
18	2.5	28.5	22	1.0794	17:01:21	25-Apr-14

Particulate Air Monitoring Data Ellisville RV007
April 25, 2014

Ellisville (RV007) Down Wind PM-10 Data April 25, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	date
1	4.1	23	33	0.5702	12:50:32	25-Apr-14
2	2.1	23.6	32	0.6639	13:05:32	25-Apr-14
3	1.9	23.9	31	0.7231	13:20:32	25-Apr-14
4	1.6	24.2	31	0.6949	13:35:32	25-Apr-14
5	1.5	24.4	29	0.4547	13:50:32	25-Apr-14
6	1.5	24.5	27	0.5078	14:05:32	25-Apr-14
7	1.6	24.7	28	0.5176	14:20:32	25-Apr-14
8	1.5	25	27	0.5364	14:35:32	25-Apr-14
9	0.7	25.3	27	0.3721	14:50:32	25-Apr-14
10	0.3	25.6	25	0.3427	15:05:32	25-Apr-14
11	0.5	26	24	0.3541	15:20:32	25-Apr-14
12	0.5	26.4	23	0.368	15:35:32	25-Apr-14
13	0.6	26.7	21	0.4048	15:50:32	25-Apr-14
14	0.7	27	22	0.423	16:05:32	25-Apr-14
15	0.5	27.3	22	0.4342	16:20:32	25-Apr-14
16	0.4	27.8	21	0.3753	16:35:32	25-Apr-14
17	0.6	28.6	21	0.4792	16:50:32	25-Apr-14
18	0.2	29.7	20	0.351	17:05:32	25-Apr-14

PID (VOC) results Ellisville (RV007)

April 25, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data EA3 UW April 25, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	4/25/2014 12:36	0	0	0	0	20.9
2	4/25/2014 12:51	0	0	0	0	20.9
3	4/25/2014 13:06	0	0	0	0	20.9
4	4/25/2014 13:21	0	0	0	0	20.9
5	4/25/2014 13:36	0	0	0	0	20.9
6	4/25/2014 13:51	0	0	0	0	20.9
7	4/25/2014 14:06	0	0	0	0	20.9
8	4/25/2014 14:21	0	0	0	0	20.9
9	4/25/2014 14:36	0	0	0	0	20.9
10	4/25/2014 14:51	0	0	0	0	20.9
11	4/25/2014 15:06	0	0	0	0	20.9
12	4/25/2014 15:21	0	0	0	0	20.9
13	4/25/2014 15:36	0	0	0	0	20.9
14	4/25/2014 15:51	0	0	0	0	20.9
15	4/25/2014 16:06	0	0	0	0	20.9
16	4/25/2014 16:21	0	0	0	0	20.9
17	4/25/2014 16:36	0	0	0	0	20.9
18	4/25/2014 16:51	0	0	0	0	20.9

PID (VOC) results Ellisville RV007
April 25, 2014

Ellisville (RV007) Downwind PID Data EA3 UW April 25, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	4/25/2014 12:35	2.5	0	0.9	0	20.5
2	4/25/2014 12:50	2.3	0	0.8	0	20.6
3	4/25/2014 13:05	1.9	0	0.4	0	20.6
4	4/25/2014 13:20	1.5	0	0.1	0	20.6
5	4/25/2014 13:35	1.3	0	0	0	20.6
6	4/25/2014 13:50	1.1	0	0	0	20.6
7	4/25/2014 14:05	0.9	0	0	0	20.6
8	4/25/2014 14:20	0.8	0	0	0	20.6
9	4/25/2014 14:35	0.7	0	0	0	20.8
10	4/25/2014 14:50	0.6	0	0	0	20.9
11	4/25/2014 15:05	0.6	0	0	0	20.9
12	4/25/2014 15:20	0.5	0	0	0	20.9
13	4/25/2014 15:35	0.4	0	0	0	20.9
14	4/25/2014 15:50	0.4	0	0	0	20.9
15	4/25/2014 16:05	0.3	0	0	0	20.9
16	4/25/2014 16:20	0.5	0	0.1	0	20.9
17	4/25/2014 16:35	0.7	0	0.2	0	20.9
18	4/25/2014 16:50	0.9	0	0.3	0	20.9

Particulate Air Monitoring Data Ellisville (RV007)

April 29, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data April 29, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	1.7	18.5	41	0.4341	11:24:25	29-Apr-14
2	1.3	19	40	0.4649	11:39:25	29-Apr-14
3	1.9	19.7	39	0.6533	11:54:25	29-Apr-14
4	1.2	20.5	38	0.6907	12:09:25	29-Apr-14
5	1.3	21.4	36	0.6481	12:24:25	29-Apr-14
6	1.6	21.5	36	0.6857	12:39:25	29-Apr-14
7	1.9	23	34	0.646	12:54:25	29-Apr-14
8	1.7	24.7	31	0.5847	13:09:25	29-Apr-14
9	1.4	25.7	29	0.4484	13:24:25	29-Apr-14
10	0.9	26.6	28	0.3725	13:39:25	29-Apr-14
11	0.6	27.5	26	0.4011	13:54:25	29-Apr-14
12	0.7	27.9	25	0.4595	14:09:25	29-Apr-14
13	0.9	28	25	0.4517	14:24:25	29-Apr-14
14	1.4	27.1	25	0.631	14:39:25	29-Apr-14
15	0.4	26.6	25	0.4563	14:54:25	29-Apr-14
16	0.5	25.8	26	0.3376	15:09:25	29-Apr-14
17	0.6	24.6	27	0.3879	15:24:25	29-Apr-14
18	1.3	23.5	29	0.4121	15:39:25	29-Apr-14
19	2.4	22.3	31	0.5225	15:54:25	29-Apr-14
20	2	20.9	35	0.7284	16:09:25	29-Apr-14

Particulate Air Monitoring Data Ellisville RV007
April 29, 2014

Ellisville (RV007) Down Wind PM-10 Data April 29, 2014

record	(MASS) ug/m3	Temp	RHumidity	Diameter	Time	Date
1	2.6	19.4	41	0.4782	11:28:15	29-Apr-14
2	2	19.6	42	0.4924	11:43:15	29-Apr-14
3	1.7	20.1	42	0.4297	11:58:15	29-Apr-14
4	1.7	20.7	42	0.4601	12:13:15	29-Apr-14
5	2	21.4	40	0.547	12:28:15	29-Apr-14
6	2.5	21.6	40	0.4948	12:43:15	29-Apr-14
7	2.6	23.1	39	0.5346	12:58:15	29-Apr-14
8	2.4	24.5	36	0.4943	13:13:15	29-Apr-14
9	3	25.7	34	0.595	13:28:15	29-Apr-14
10	2.6	27.1	32	0.4511	13:43:15	29-Apr-14
11	1.8	28.6	29	0.4508	13:58:15	29-Apr-14
12	2.2	30.1	27	0.5075	14:13:15	29-Apr-14
13	2	30.5	25	0.43	14:28:15	29-Apr-14
14	1.9	29.1	25	0.446	14:43:15	29-Apr-14
15	1.1	27.7	26	0.4702	14:58:15	29-Apr-14
16	1.2	25.8	28	0.3614	15:13:15	29-Apr-14
17	1.7	24.1	30	0.5485	15:28:15	29-Apr-14
18	2	22.8	32	0.4808	15:43:15	29-Apr-14
19	3.1	21.6	34	0.5657	15:58:15	29-Apr-14
20	3.2	20.3	37	0.4851	16:13:15	29-Apr-14

PID (VOC) results Ellisville (RV007)

April 29, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data EA3 UW April 29, 2014

Line#	Date Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	4/29/2014 11:14	0		0		0.2		0		20.9	
2	4/29/2014 11:29	0		0		0.3		0		20.9	
3	4/29/2014 11:44	0		0		0.5		0		20.9	
4	4/29/2014 11:59	0		0		0.5		0		20.9	
5	4/29/2014 12:14	0		0		0.2		0		20.9	
6	4/29/2014 12:29	0		0		0.1		0		20.9	
7	4/29/2014 12:44	0		0		0.2		0		20.9	
8	4/29/2014 12:59	0		0		0.4		0		20.9	
9	4/29/2014 13:14	0		0		0.7		0		20.9	
10	4/29/2014 13:29	0		0		1.3		0		20.9	
11	4/29/2014 13:44	0		0		2		0		20.9	
12	4/29/2014 13:59	0		0		3		0		20.9	
13	4/29/2014 14:14	0		0		2.2		0		21.2	
14	4/29/2014 14:29	0		0		0.3		0		21.2	
15	4/29/2014 14:44	0		0		0		0		21.2	
16	4/29/2014 14:59	0		0		0		0		21.1	
17	4/29/2014 15:14	0		0		0		0		21.1	
18	4/29/2014 15:29	0		0		0		0		21.1	
19	4/29/2014 15:44	0		0		0		0		20.9	
20	4/29/2014 15:59	0		0		0		0		21.1	

PID (VOC) results Ellisville RV007
April 29, 2014

Ellisville (RV007) Downwind PID Data EA3 UW April 29, 2014

Line#	Date Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	4/29/2014 11:08	0		0		0		0		20.9	
2	4/29/2014 11:23	0		0		0		0		20.9	
3	4/29/2014 11:38	0		0		0		0		20.9	
4	4/29/2014 11:53	0		0		0		0		20.9	
5	4/29/2014 12:08	0.1		0		0		0		20.9	
6	4/29/2014 12:23	0		0		0		0		20.9	
7	4/29/2014 12:38	0		0		0		0		20.9	
8	4/29/2014 12:53	0.2		0		0		0		20.9	
9	4/29/2014 13:08	0.2		0		0		0		20.9	
10	4/29/2014 13:23	0.3		0		0		0		20.9	
11	4/29/2014 13:38	0.7		0		0		0		20.9	
12	4/29/2014 13:53	0.7		0		0		0		20.9	
13	4/29/2014 14:08	0.8		0		0		0		21	
14	4/29/2014 14:23	0.4		0		0		0		21.1	
15	4/29/2014 14:38	0.4		0		0		0		21.1	
16	4/29/2014 14:53	0.2		0		0		0		21.1	
17	4/29/2014 15:08	0.2		0		0		0		21.1	
18	4/29/2014 15:23	0.1		0		0		0		21	
19	4/29/2014 15:38	0.1		0		0		0		20.9	
20	4/29/2014 15:53	0.1		0		0		0		20.9	
21	4/29/2014 16:08	0		0		0		0		21	

Particulate Air Monitoring Data Ellisville (RV007)

May 1, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data May 1, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	5.1	16.1	39	0.517	15:50:04	1-May-14
2	3.8	15	42	0.492	16:05:04	1-May-14
3	3.6	14.4	44	0.4001	16:20:04	1-May-14
4	3.1	14.4	46	0.5069	16:35:04	1-May-14

Ellisville (RV007) Down Wind PM-10 Data May 1, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	5.1	16.1	39	0.517	15:50:04	1-May-14
2	3.8	15	42	0.492	16:05:04	1-May-14
3	3.6	14.4	44	0.4001	16:20:04	1-May-14
4	3.1	14.4	46	0.5069	16:35:04	1-May-14

PID (VOC) results Ellisville (RV007)

May 1, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data EA3 UW May 1, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	5/1/2014 15:32	0	0	0	0	20.9
2	5/1/2014 15:47	0	0	0	0	20.9
3	5/1/2014 16:02	0	0	0	0	20.9

Ellisville (RV007) Downwind PID Data EA3 UW May 1, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	5/1/2014 15:36	0	0	0.1	0	20.9
2	5/1/2014 15:51	0	0	0	0	20.9
3	5/1/2014 16:06	0	0	0	0	20.9
4	5/1/2014 16:21	0	0	0	0	20.9

Particulate Air Monitoring Data Ellisville (RV007)

May 2, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Down Wind PM-10 Data May 2, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	6.5	14	47	0.4978	9:02:11	2-May-14
2	7.2	13.4	50	0.5693	9:17:11	2-May-14
3	7.1	13	52	0.5663	9:32:11	2-May-14
4	8	12.8	52	0.6492	9:47:11	2-May-14
5	7.4	12.8	53	0.6188	10:02:11	2-May-14

****NOTE**** Upwind data not available for 5/2/2014

PID (VOC) results Ellisville (RV007)

May 2, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data EA3 UW May 2, 2014

Line#	Date Time	CO (ppm)	VOC (ppm)	H2S (ppm)	LEL (%)	OXY (%)
1	5/2/2014 8:48	0	0	0	0	20.9
2	5/2/2014 9:03	0	0	0	0	20.9
3	5/2/2014 9:18	0	0	0	0	20.9
4	5/2/2014 9:33	0	0	0	0	20.9
5	5/2/2014 9:48	0	0	0	0	20.9

Ellisville (RV007) Downwind PID Data EA3 UW May 2, 2014

Line#	Date Time	CO (ppm)	VOC (ppm)	H2S (ppm)	LEL (%)	OXY (%)
1	5/2/2014 8:44	0	0	0	0	20.9
2	5/2/2014 8:59	0	0	0	0	20.9
3	5/2/2014 9:14	0	0	0	0	20.9
4	5/2/2014 9:29	0.1	0	0	0	20.9
5	5/2/2014 9:44	0.1	0	0	0	20.9

Particulate Air Monitoring Data Ellisville (RV007)

May 7, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data May 7, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	24.8	30.2	51	0.5725	9:15:10	7-May-14
2	25.7	30.1	51	0.5134	9:30:10	7-May-14
3	26.2	29.3	50	0.5535	9:45:15	7-May-14
4	26.6	28.9	50	0.5554	10:00:10	7-May-14
5	26.9	28.2	50	0.5775	10:15:10	7-May-14

Ellisville (RV007) Down Wind PM-10 Data May 7, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	24.2	30.2	43	0.37	9:20:15	7-May-14
2	25.8	30.1	43	0.36	9:35:15	7-May-14
3	26	29.3	45	0.38	9:50:15	7-May-14
4	27.8	28.9	46	0.4	10:05:15	7-May-14
5	24.9	28.2	47	0.38	10:20:15	7-May-14

PID (VOC) results Ellisville (RV007)

May 7, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data May 7, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm (ppm)	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/7/2014	8:59	1.4	0	0.6	0	20.9	
2	5/7/2014	9:14	1.5	0	0.5	0	20.9	
3	5/7/2014	9:29	1.3	0	0.4	0	20.9	
4	5/7/2014	9:44	1.2	0	0.4	0	20.9	
5	5/7/2014	9:59	1.2	0	0.3	0	20.9	

Ellisville (RV007) Downwind PID Data May 7, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm (ppm)	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/7/2014	9:05	1.1	0	1.1	0	20.9	
2	5/7/2014	9:20	1.1	0	1.3	0	20.9	
3	5/7/2014	9:35	0.8	0	0.4	0	20.9	
4	5/7/2014	9:50	0.6	0	0	0	20.9	
5	5/7/2014	10:05	0.3	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

May 16, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data May 16, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	32.5	12.8	54	0.3127	9:04:11	16-May-14
2	32.3	13.6	53	0.3061	9:19:11	16-May-14
3	32.8	14.3	50	0.3105	9:34:11	16-May-14
4	32.1	15	48	0.3075	9:49:11	16-May-14
5	31.3	15.5	46	0.3081	10:04:11	16-May-14
6	32.1	15.2	45	0.3137	10:19:11	16-May-14
7	31.1	15.4	45	0.3074	10:34:11	16-May-14
8	30.8	15.6	43	0.3067	10:49:11	16-May-14
9	30.7	15.5	42	0.3041	11:04:11	16-May-14
10	30.9	15.6	42	0.3007	11:19:11	16-May-14
11	30.9	15.6	41	0.3149	11:34:11	16-May-14
12	29.4	15.8	41	0.2938	11:49:11	16-May-14
13	29.2	15.7	40	0.2867	12:04:11	16-May-14
14	29.8	15.6	40	0.2861	12:19:11	16-May-14
15	28.7	15.6	40	0.2725	12:34:11	16-May-14
16	29.9	15.6	40	0.2798	12:49:11	16-May-14
17	29.6	15.6	40	0.2757	13:04:11	16-May-14
18	30.1	15.8	40	0.2826	13:19:11	16-May-14
19	29.2	15.8	40	0.2746	13:34:11	16-May-14
20	29.3	15.8	39	0.2716	13:49:11	16-May-14
21	29.5	16	39	0.2892	14:04:11	16-May-14
22	29.8	16.2	39	0.2886	14:19:11	16-May-14
23	29.2	16.3	39	0.2873	14:34:11	16-May-14
24	30.5	16.5	39	0.2855	14:49:11	16-May-14
25	29.2	16.5	38	0.2905	15:04:11	16-May-14
26	28.3	16.5	38	0.2774	15:19:11	16-May-14
27	29.2	16.5	39	0.2872	15:34:11	16-May-14
28	28.4	16.7	39	0.2706	15:49:11	16-May-14
29	30.4	16.7	37	0.2927	16:04:11	16-May-14
30	28.7	16.7	38	0.2733	16:19:11	16-May-14
31	28.5	16.8	37	0.2775	16:34:11	16-May-14
32	28.8	16.6	38	0.2806	16:49:11	16-May-14
33	28.3	16.5	38	0.2758	17:04:11	16-May-14
34	28.7	16.3	38	0.2833	17:19:11	16-May-14
35	29.4	16.3	38	0.2881	17:34:11	16-May-14
36	29.1	16.2	38	0.2833	17:49:11	16-May-14
37	28.9	16.1	38	0.2861	18:04:11	16-May-14

Ellisville (RV007) Down Wind PM-10 Data May 16, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	8.6	17.1	47	0.5651	9:13:16	16-May-14
2	8.8	17.5	43	0.5844	9:28:16	16-May-14
3	8.2	17.5	42	0.5898	9:43:16	16-May-14
4	8.3	17	42	0.7216	9:58:16	16-May-14
5	7.9	15.9	43	0.6656	10:13:16	16-May-14
6	7.9	15.1	43	0.7827	10:28:16	16-May-14
7	7.7	14.7	44	0.7196	10:43:16	16-May-14
8	7.1	14.5	43	0.7271	10:58:16	16-May-14
9	6.8	14.3	43	0.6271	11:13:16	16-May-14
10	6.6	14.4	42	0.6014	11:28:16	16-May-14
11	7	14.8	43	0.7488	11:43:16	16-May-14
12	6.1	15.1	42	0.6791	11:58:16	16-May-14
13	5.5	15.2	42	0.6472	12:13:16	16-May-14
14	4.9	15.3	40	0.5172	12:28:16	16-May-14
15	5.1	15.3	41	0.4801	12:43:16	16-May-14
16	5.2	15.3	41	0.4807	12:58:16	16-May-14
17	5.2	15.6	40	0.514	13:13:16	16-May-14
18	5.3	15.7	40	0.5147	13:28:16	16-May-14
19	5.1	15.8	39	0.4592	13:43:16	16-May-14
20	5.2	15.9	39	0.4491	13:58:16	16-May-14
21	5	16.1	38	0.4889	14:13:16	16-May-14
22	4.8	16.3	39	0.443	14:28:16	16-May-14
23	4.8	16.5	39	0.4517	14:43:16	16-May-14
24	4.8	16.6	38	0.5182	14:58:16	16-May-14
25	4.2	16.6	39	0.4634	15:13:16	16-May-14
26	4.6	16.7	38	0.4237	15:28:16	16-May-14
27	4.6	18.4	37	0.4149	15:43:16	16-May-14
28	4	21.4	33	0.4131	15:58:16	16-May-14
29	3.6	22.5	31	0.3765	16:13:16	16-May-14
30	3.4	23.3	29	0.3842	16:28:16	16-May-14
31	3.7	22.3	29	0.4134	16:43:16	16-May-14
32	3.6	22.1	30	0.4375	16:58:16	16-May-14
33	3.4	21.2	31	0.3915	17:13:16	16-May-14
34	3.3	20.1	31	0.4161	17:28:16	16-May-14
35	3.5	19.3	32	0.4068	17:43:16	16-May-14
36	3.5	18.7	33	0.4191	17:58:16	16-May-14
37	3.5	17.9	34	0.4228	18:13:16	16-May-14
38	3.6	17.2	36	0.4036	18:28:16	16-May-14
39	3.7	16.8	38	0.3982	18:43:16	16-May-14
40	3.8	16.3	43	0.3771	18:58:16	16-May-14

PID (VOC) results Ellisville (RV007)

May 16, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data May 16, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	5/16/2014 8:49	0	0	0	0	20.9
2	5/16/2014 9:04	0	0	0	0	20.9
3	5/16/2014 9:19	0	0	0	0	20.9
4	5/16/2014 9:34	0	0	0	0	20.9
5	5/16/2014 9:49	0	0	0	0	20.9
6	5/16/2014 10:04	0	0	0	0	20.9
7	5/16/2014 10:19	0	0	0	0	20.9
8	5/16/2014 10:34	0	0	0	0	20.9
9	5/16/2014 10:49	0	0	0	0	20.9
10	5/16/2014 11:04	0	0	0	0	20.9
11	5/16/2014 11:19	0	0	0	0	20.9
12	5/16/2014 11:34	0	0	0	0	20.9
13	5/16/2014 11:49	0	0	0	0	20.9
14	5/16/2014 12:04	0	0	0	0	20.9
15	5/16/2014 12:19	0	0	0	0	20.9
16	5/16/2014 12:34	0	0	0	0	20.9
17	5/16/2014 12:49	0	0	0	0	20.9
18	5/16/2014 13:04	0	0	0	0	20.9
19	5/16/2014 13:19	0	0	0	0	20.9
20	5/16/2014 13:34	0	0	0	0	20.9
21	5/16/2014 13:49	0	0	0	0	20.9
22	5/16/2014 14:04	0	0	0	0	20.9
23	5/16/2014 14:19	0	0	0	0	20.9
24	5/16/2014 14:34	0	0	0	0	20.9
25	5/16/2014 14:49	0	0	0	0	20.9
26	5/16/2014 15:04	0	0	0	0	20.9

PID (VOC) results Ellisville RV007
May 16, 2014

Ellisville (RV007) Downwind PID Data May 16, 2014

Line#	Date Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/16/2014 9:02	0.8	0	0.5	0	20.9	
2	5/16/2014 9:17	0.6	0	0.1	0	20.9	
3	5/16/2014 9:32	0.4	0	0	0	20.9	
4	5/16/2014 9:47	0.3	0	0	0	20.9	
5	5/16/2014 10:02	0.2	0	0	0	20.9	
6	5/16/2014 10:17	0.2	0	0	0	20.9	
7	5/16/2014 10:32	0.2	0	0	0	20.9	
8	5/16/2014 10:47	0.2	0	0	0	20.9	
9	5/16/2014 11:02	0.2	0	0	0	20.9	
10	5/16/2014 11:17	0.2	0	0	0	20.9	
11	5/16/2014 11:32	0.3	0	0	0	20.9	
12	5/16/2014 11:47	0.3	0	0	0	20.9	
13	5/16/2014 12:02	0.3	0	0	0	20.9	
14	5/16/2014 12:17	0.3	0	0	0	20.9	
15	5/16/2014 12:32	0.3	0	0	0	20.9	
16	5/16/2014 12:47	0.3	0	0	0	20.9	
17	5/16/2014 13:02	0.3	0	0	0	20.9	
18	5/16/2014 13:17	0.3	0	0	0	20.9	
19	5/16/2014 13:32	0.3	0	0	0	20.9	
20	5/16/2014 13:47	0.3	0	0	0	20.9	
21	5/16/2014 14:02	0.3	0	0	0	20.9	
22	5/16/2014 14:17	0.4	0	0	0	20.9	
23	5/16/2014 14:32	0.4	0	0	0	20.9	
24	5/16/2014 14:47	0.4	0	0	0	20.9	
25	5/16/2014 15:02	0.4	0	0	0	20.9	
26	5/16/2014 15:17	0.5	0	0	0	20.9	
27	5/16/2014 15:32	0.6	0	0.1	0	20.9	
28	5/16/2014 15:47	0.8	0	1	0	20.9	
29	5/16/2014 16:02	0.8	0	1	0	21.1	
30	5/16/2014 16:17	0.7	0	0.4	0	21.2	
31	5/16/2014 16:32	0.7	0	0.1	0	21.2	
32	5/16/2014 16:47	0.6	0	0	0	21.2	
33	5/16/2014 17:02	0.4	0	0	0	21.1	

Particulate Air Monitoring Data Ellisville (RV007)

May 19, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data May 19, 2014

record (MASS)	ug/m3	Temp	RHumidity	Diameter	Time	Date
1	0.3	14.4	47	0.3357	8:39:12	19-May-14
2	0	16.3	48	0.3372	8:54:12	19-May-14
3	0	17.9	48	0.3374	9:09:12	19-May-14
4	0	18.8	49	0.3374	9:24:12	19-May-14
5	0	19.2	49	0.3374	9:39:12	19-May-14
6	0	19.6	49	0.3373	9:54:12	19-May-14
7	0	20.3	49	0.3374	10:09:12	19-May-14
8	0	20.9	49	0.3374	10:24:12	19-May-14
9	0	21.2	49	0.3374	10:39:12	19-May-14
10	0	21.5	49	0.3374	10:54:12	19-May-14
11	0	21.9	49	0.3374	11:09:12	19-May-14
12	0	22.1	49	0.3375	11:24:12	19-May-14
13	0	22.6	49	0.3374	11:39:12	19-May-14
14	0	23.1	49	0.3375	11:54:12	19-May-14
15	0	23.9	49	0.3375	12:09:12	19-May-14
16	0	24.4	49	0.3375	12:24:12	19-May-14
17	0	25.4	49	0.3375	12:39:12	19-May-14
18	0	26.4	49	0.3375	12:54:12	19-May-14
19	0	27.8	49	0.3375	13:09:12	19-May-14
20	0	28.8	49	0.3375	13:24:12	19-May-14
21	0	29.8	49	0.3375	13:39:12	19-May-14
22	0	30.3	49	0.3375	13:54:12	19-May-14
23	0	30.3	49	0.3375	14:09:12	19-May-14
24	0	30.1	49	0.3375	14:24:12	19-May-14
25	0	30	49	0.3375	14:39:12	19-May-14
26	0	30	49	0.3375	14:54:12	19-May-14
27	0	30	49	0.3375	15:09:12	19-May-14
28	0	29.7	49	0.3375	15:24:12	19-May-14
29	0	29.7	49	0.3374	15:39:12	19-May-14
30	0	30	48	0.3375	15:54:12	19-May-14
31	0	29.9	48	0.3375	16:09:12	19-May-14
32	0	29.9	48	0.3375	16:24:12	19-May-14
33	0	31.1	48	0.3375	16:39:12	19-May-14

Particulate Air Monitoring Data Ellisville RV007
May 19, 2014

Ellisville (RV007) Down Wind PM-10 Data May 19, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	17.2	14.1	53	0.5594	8:41:37	19-May-14
2	12.5	16	52	0.4836	8:56:37	19-May-14
3	14.1	17.3	49	0.4841	9:11:37	19-May-14
4	12	18.1	47	0.4776	9:26:37	19-May-14
5	13.6	18.6	45	0.4616	9:41:37	19-May-14
6	12.6	19.6	43	0.5049	9:56:37	19-May-14
7	9.7	20.7	41	0.4154	10:11:37	19-May-14
8	9.7	21.7	40	0.4219	10:26:37	19-May-14
9	8.8	22.7	39	0.4037	10:41:37	19-May-14
10	8.9	23.6	38	0.3987	10:56:37	19-May-14
11	9.3	25.2	36	0.4255	11:11:37	19-May-14
12	8.9	26.6	34	0.4226	11:26:37	19-May-14
13	9.1	27.6	33	0.4088	11:41:37	19-May-14
14	8.7	28.1	33	0.4149	11:56:37	19-May-14
15	18.7	28.5	33	0.4876	12:11:37	19-May-14
16	13.6	28.3	34	0.5671	12:26:37	19-May-14
17	19.2	28.3	36	0.7351	12:41:37	19-May-14
18	14.1	28.2	37	0.6262	12:56:37	19-May-14
19	12.9	28.3	38	0.7697	13:11:37	19-May-14
20	11.4	28.7	38	0.5429	13:26:37	19-May-14
21	11.9	29.3	38	0.5622	13:41:37	19-May-14
22	12.2	29.7	37	0.7363	13:56:37	19-May-14
23	10.1	30	37	0.5404	14:11:37	19-May-14
24	10	30.4	37	0.512	14:26:37	19-May-14
25	10.3	30.3	37	0.4761	14:41:37	19-May-14
26	10	30.2	38	0.444	14:56:37	19-May-14
27	10.5	30.1	38	0.4807	15:11:37	19-May-14
28	11	29.8	39	0.4589	15:26:37	19-May-14
29	13.2	30.4	38	0.4929	15:41:37	19-May-14
30	11.2	30.8	37	0.4577	15:56:37	19-May-14
31	20.6	30.3	38	0.5123	16:11:37	19-May-14
32	12.1	30.3	39	0.6177	16:26:37	19-May-14

PID (VOC) results Ellisville (RV007)

May 19, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

PID (VOC) results Ellisville RV007
May 19, 2014

Ellisville (RV007) Upwind PID Data May 19, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	(ppm)	H2S (ppm)	Alarm	LEL (%)	OXY Alarm	(%)	Alarm
1	5/19/2014	8:23	0.3		0	0		0		20.9	
2	5/19/2014	8:38	0.3		0	0.1		0		20.9	
3	5/19/2014	8:53	0.5		0	0		0		20.9	
4	5/19/2014	9:08	0.6		0	0		0		21	
5	5/19/2014	9:23	0.6		0	0		0		21.2	
6	5/19/2014	9:38	0.6		0	0		0		21.2	
7	5/19/2014	9:53	0.6		0	0		0		21.2	
8	5/19/2014	10:08	0.7		0	0		0		21.2	
9	5/19/2014	10:23	0.7		0	0		0		21.2	
10	5/19/2014	10:38	0.7		0	0		0		21.2	
11	5/19/2014	10:53	0.7		0	0		0		21.2	
12	5/19/2014	11:08	0.8		0	0		0		21.2	
13	5/19/2014	11:23	0.8		0	0.1		0		21.2	
14	5/19/2014	11:38	0.8		0	0.1		0		21.2	
15	5/19/2014	11:53	0.8		0	0.1		0		21.2	
16	5/19/2014	12:08	1		0	0.1		0		21.2	
17	5/19/2014	12:23	0.9		0	0.1		0		21.1	
18	5/19/2014	12:38	1		0	0.1		0		21.1	
19	5/19/2014	12:53	1.1		0	0.2		0		21.2	
20	5/19/2014	13:08	1.3		0	0.2		0		21.2	
21	5/19/2014	13:23	1.4		0	0.3		0		21.1	
22	5/19/2014	13:38	1.7		0	0.2		0		21.2	
23	5/19/2014	13:53	1.8		0	0.2		0		21.2	
24	5/19/2014	14:08	1.7		0	0.2		0		21.2	
25	5/19/2014	14:23	1.6		0	0.2		0		21.2	
26	5/19/2014	14:38	1.6		0	0.2		0		21.2	
27	5/19/2014	14:53	1.7		0	0.2		0		21.2	
28	5/19/2014	15:08	1.5		0	0.2		0		21.2	
29	5/19/2014	15:23	1.6		0	0.2		0		21.2	
30	5/19/2014	15:38	1.6		0	0.2		0		21.2	
31	5/19/2014	15:53	1.7		0	0.2		0		21.2	
32	5/19/2014	16:08	1.4		0	0.2		0		21.2	

PID (VOC) results Ellisville RV007
May 19, 2014

Ellisville (RV007) Downwind PID Data May 19, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	5/19/2014	8:28	0.1		0		0.1		0		20.9	
2	5/19/2014	8:43	0.1		0		0.2		0		20.9	
3	5/19/2014	8:58	0.1		0		0.2		0		21.1	
4	5/19/2014	9:13	0.1		0		0.1		0		21.2	
5	5/19/2014	9:28	0.1		0		0		0		21.2	
6	5/19/2014	9:43	0		0		0		0		21.2	
7	5/19/2014	9:58	0		0		0		0		21.2	
8	5/19/2014	10:13	0		0		0		0		21.3	
9	5/19/2014	10:28	0		0		0		0		21.2	
10	5/19/2014	10:43	0		0		0		0		21.2	
11	5/19/2014	10:58	0.1		0		0.8		0		21.2	
12	5/19/2014	11:13	0.1		0		1.9		0		21.3	
13	5/19/2014	11:28	0.2		0		2		0		21.4	
14	5/19/2014	11:43	0.2		0		1.7		0		21.4	
15	5/19/2014	11:58	0.3		0		0.8		0		21.4	
16	5/19/2014	12:13	0.1		0		0.2		0		21.5	
17	5/19/2014	12:28	0.1		0		0		0		21.4	
18	5/19/2014	12:43	0		0		0		0		21.5	
19	5/19/2014	12:58	0		0		0		0		21.4	
20	5/19/2014	13:13	0		0		0		0		21.4	
21	5/19/2014	13:28	0		0		0		0		21.4	
22	5/19/2014	13:43	0		0		0		0		21.4	
23	5/19/2014	13:58	0		0		0		0		21.4	
24	5/19/2014	14:13	0		0		0		0		21.4	
25	5/19/2014	14:28	0		0		0		0		21.4	
26	5/19/2014	14:43	0		0		0		0		21.4	
27	5/19/2014	14:58	0		0		0		0		21.4	
28	5/19/2014	15:13	0		0		0		0		21.4	
29	5/19/2014	15:28	0		0		0		0		21.4	
30	5/19/2014	15:43	0		0		0		0		21.4	
31	5/19/2014	15:58	0		0		0		0		21.4	
32	5/19/2014	16:13	0		0		0		0		21.4	

Particulate Air Monitoring Data Ellisville (RV007)

May 21, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data May 21, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	3.2	27.1	57	0.353	9:24:11	21-May-14
2	0	29.2	55	0.3412	9:39:11	21-May-14
3	0.1	31.9	50	0.3599	9:54:11	21-May-14
4	0	34.1	45	0.3412	10:09:11	21-May-14
5	0	35.2	42	0.3375	10:24:11	21-May-14
6	0.2	36.1	40	0.3581	10:39:11	21-May-14
7	0.3	36.8	39	0.4825	10:54:11	21-May-14
8	0.2	37.9	37	0.4195	11:09:11	21-May-14
9	0.1	38.7	36	0.3573	11:24:11	21-May-14
10	0.3	38.8	35	0.3952	11:39:11	21-May-14
11	0	38.6	35	0.3467	11:54:11	21-May-14
12	0.4	38.9	36	0.4327	12:09:11	21-May-14
13	0	39.1	35	0.3547	12:24:11	21-May-14
14	0.4	38.5	36	0.3712	12:39:11	21-May-14
15	0.1	37.3	37	0.3728	12:54:11	21-May-14
16	0.2	36.6	38	0.3508	13:09:11	21-May-14
17	0.1	36.6	39	0.3599	13:24:11	21-May-14
18	0	36.7	39	0.3412	13:39:11	21-May-14

Particulate Air Monitoring Data Ellisville RV007
May 21, 2014

Ellisville (RV007) Down Wind PM-10 Data May 21, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	77.2	26.3	59	0.6644	9:25:39	21-May-14
2	76.9	27.2	61	0.6356	9:40:39	21-May-14
3	77	28.3	60	0.6477	9:55:39	21-May-14
4	76.8	29.6	57	0.6344	10:10:39	21-May-14
5	76.8	30	55	0.6234	10:25:39	21-May-14
6	77	30.2	54	0.6341	10:40:39	21-May-14
7	76.4	30.5	54	0.62	10:55:39	21-May-14
8	77.1	30.9	53	0.6281	11:10:39	21-May-14
9	76.3	31.2	52	0.6206	11:25:39	21-May-14
10	76.6	31.4	51	0.6249	11:40:39	21-May-14
11	76.5	31.8	50	0.6153	11:55:39	21-May-14
12	76.9	32.2	49	0.6211	12:10:39	21-May-14
13	77	32.5	49	0.6166	12:25:39	21-May-14
14	76.7	33	48	0.614	12:40:39	21-May-14
15	83.5	33.7	46	0.6751	12:55:39	21-May-14
16	76.2	34	45	0.6205	13:10:39	21-May-14
17	76.6	34.2	45	0.6174	13:25:39	21-May-14
18	75.8	34.9	44	0.6129	13:40:39	21-May-14

PID (VOC) results Ellisville (RV007)

May 21, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data May 21, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/21/2014	9:10	0	0	0.3	0	20.9	
2	5/21/2014	9:25	0	0	0.3	0	20.9	
3	5/21/2014	9:40	0	0	0.3	0	20.9	
4	5/21/2014	9:55	0	0	0.3	0	20.9	
5	5/21/2014	10:10	0.1	0	0.2	0	20.9	
6	5/21/2014	10:25	0	0	0.2	0	20.9	
7	5/21/2014	10:40	0	0	0.1	0	20.9	
8	5/21/2014	10:55	0	0	0.1	0	20.9	
9	5/21/2014	11:10	0	0	0.1	0	20.9	
10	5/21/2014	11:25	0	0	0.1	0	20.9	
11	5/21/2014	11:40	0	0	0.1	0	20.9	
12	5/21/2014	11:55	0	0	0.1	0	20.9	
13	5/21/2014	12:10	0	0	0.1	0	20.9	
14	5/21/2014	12:25	0	0	0.1	0	20.9	
15	5/21/2014	12:40	0	0	0.1	0	20.9	
16	5/21/2014	12:55	0	0	0.1	0	20.9	
17	5/21/2014	13:10	0	0	0.1	0	20.9	
18	5/21/2014	13:25	0.1	0	0.2	0	20.9	

PID (VOC) results Ellisville RV007
May 21, 2014

Ellisville (RV007) Down Wind PID Data May 21, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm (ppm)	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/21/2014	9:08	0.6	0	0.7	0	20.9	
2	5/21/2014	9:23	0.6	0	2.1	0	20.9	
3	5/21/2014	9:38	0.8	0	3.6	0	20.9	
4	5/21/2014	9:53	1.1	0	4.9	0	20.9	
5	5/21/2014	10:08	1.1	0	4.8	0	20.9	
6	5/21/2014	10:23	1.3	0	4.6	0	20.9	
7	5/21/2014	10:38	1.2	0	4.5	0	20.9	
8	5/21/2014	10:53	1.3	0	5.3	0	20.9	
9	5/21/2014	11:08	1.5	0	5.9	0	20.9	
10	5/21/2014	11:23	1.4	0	5.2	0	20.9	
11	5/21/2014	11:38	1.3	0	4.4	0	20.9	
12	5/21/2014	11:53	1	0	3.8	0	20.9	
13	5/21/2014	12:08	0.9	0	3.4	0	20.9	
14	5/21/2014	12:23	0.7	0	2.8	0	20.9	
15	5/21/2014	12:38	0.4	0	1.3	0	20.9	
16	5/21/2014	12:53	0.1	0	0.1	0	20.9	
17	5/21/2014	13:08	0.1	0	0	0	20.9	
18	5/21/2014	13:23	0	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

May 28, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data May 28, 2014

Record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	16.7	30.3	52	0.5633	14:02:22	28-May-14
2	14.7	30.7	49	0.5213	14:17:22	28-May-14
3	16.7	31	48	0.5116	14:32:22	28-May-14
4	17.6	32	49	0.5008	14:47:22	28-May-14
5	17.1	34	43	0.4568	15:02:22	28-May-14
6	17	35.1	40	0.4465	15:17:22	28-May-14
7	18.4	34.6	43	0.4533	15:32:22	28-May-14
8	18.8	33.6	45	0.4767	15:47:22	28-May-14
9	20.4	32.6	48	0.5013	16:02:22	28-May-14
10	17.5	31.8	50	0.5773	16:17:22	28-May-14
11	14.2	31.1	52	0.6407	16:32:22	28-May-14
12	13.7	30.7	55	0.6135	16:47:22	28-May-14

Ellisville (RV007) Down Wind PM-10 Data May 28, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	15.6	34.2	43	0.4683	14:05:49	28-May-14
2	14.7	35.5	38	0.4161	14:20:49	28-May-14
3	14.1	37.1	35	0.41	14:35:49	28-May-14
4	14.6	38.1	33	0.3814	14:50:49	28-May-14
5	14.8	38.9	31	0.3771	15:05:49	28-May-14
6	16.5	39	31	0.3834	15:20:49	28-May-14
7	15.6	38.5	32	0.3713	15:35:49	28-May-14
8	16.4	37.2	35	0.3904	15:50:49	28-May-14
9	16.6	36.1	38	0.4243	16:05:49	28-May-14
10	12.6	34.9	40	0.4412	16:20:49	28-May-14
11	12.2	33.9	42	0.4647	16:35:49	28-May-14
12	12.8	33.1	45	0.4714	16:50:49	28-May-14

PID (VOC) results Ellisville (RV007)

May 28, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data May 28, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	5/28/2014	13:50	0.3		0.1		1.2		0		20.6	
2	5/28/2014	14:05	0.3		0		2.5		0		20.7	
3	5/28/2014	14:20	0.3		0		2.5		0		20.8	
4	5/28/2014	14:35	0.3		0		2.8		0		20.7	
5	5/28/2014	14:50	0.7		0		4		0		20.8	
6	5/28/2014	15:05	0.9		0		4.3		0		20.9	
7	5/28/2014	15:20	0.7		0		3.2		0		20.9	
8	5/28/2014	15:35	0.3		0		1.9		0		20.9	
9	5/28/2014	15:50	0.1		0		1.1		0		20.9	
10	5/28/2014	16:05	0		0		0.3		0		20.9	
11	5/28/2014	16:20	0		0		0		0		20.9	
12	5/28/2014	16:35	0		0		0		0		20.9	

PID (VOC) results Ellisville RV007
May 28, 2014

Ellisville (RV007) Down Wind PID Data May 28, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	(ppm)	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/28/2014	13:52	1.6	0		0.7	0	20.9	
2	5/28/2014	14:07	1.7	0		0.8	0	20.9	
3	5/28/2014	14:22	1.7	0		0.7	0	20.9	
4	5/28/2014	14:37	1.8	0		0.7	0	20.9	
5	5/28/2014	14:52	1.8	0		0.6	0	20.9	
6	5/28/2014	15:07	1.7	0		0.5	0	20.9	
7	5/28/2014	15:22	1.6	0		0.5	0	20.9	
8	5/28/2014	15:37	1.4	0		0.4	0	20.9	
9	5/28/2014	15:52	1.2	0		0.3	0	20.9	
10	5/28/2014	16:07	1	0		0.3	0	20.9	
11	5/28/2014	16:22	0.8	0		0.2	0	20.9	
12	5/28/2014	16:37	0.6	0		0.2	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

May 30, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data May 30, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	14.2	25.3	59	0.5016	9:10:44	30-May-14
2	14.3	26.7	61	0.4951	9:25:44	30-May-14
3	13.2	28.3	58	0.471	9:40:44	30-May-14
4	13.9	31.5	51	0.4908	9:55:44	30-May-14
5	11.6	34.1	42	0.4523	10:10:44	30-May-14
6	10.6	34.7	40	0.4505	10:25:44	30-May-14
7	10.9	34.9	40	0.4444	10:40:44	30-May-14
8	12.1	37.3	37	0.466	10:55:44	30-May-14

Ellisville (RV007) Down Wind PM-10 Data May 30, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	Date
1	17	25.1	64	0.6811	9:07:07	30-May-14
2	12.5	28.1	58	0.6607	9:22:07	30-May-14
3	12.1	29.3	54	0.6327	9:37:07	30-May-14
4	11.9	30	52	0.597	9:52:07	30-May-14
5	10	31.3	49	0.5999	10:07:07	30-May-14
6	10.7	31.8	47	0.5499	10:22:07	30-May-14
7	11	31.2	48	0.5586	10:37:07	30-May-14
8	11.5	31	49	0.5573	10:52:07	30-May-14
9	10.3	31.1	47	0.5076	11:07:07	30-May-14

PID (VOC) results Ellisville (RV007)

May 30, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data May 30, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/30/2014	8:55	0.2	0	0	0	20.9	
2	5/30/2014	9:10	0.2	0	0	0	20.9	
3	5/30/2014	9:25	0.3	0	0	0	20.9	
4	5/30/2014	9:40	0.5	0	0.1	0	20.9	
5	5/30/2014	9:55	0.7	0	0.1	0	20.9	
6	5/30/2014	10:10	0.8	0	0.1	0	20.9	
7	5/30/2014	10:25	0.7	0	0	0	20.9	
8	5/30/2014	10:40	0.8	0	0.1	0	20.9	

Ellisville (RV007) Down Wind PID Data May 30, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	5/30/2014	9:20	1.7	0	0.2	0	20.9	
2	5/30/2014	9:35	1.6	0	0	0	20.9	
3	5/30/2014	9:50	1.3	0	0	0	20.8	
4	5/30/2014	10:05	1.6	0	0	0	20.8	
5	5/30/2014	10:20	1.2	0	0	0	20.9	
6	5/30/2014	10:35	0.9	0	0	0	20.9	
7	5/30/2014	10:50	0.8	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

June 5, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data June 5, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	14.4	23.1	70	0.0283	8:48:57	5-Jun-14
2	14.8	23.7	68	0.028	9:03:57	5-Jun-14
3	15.4	24	66	0.0285	9:18:57	5-Jun-14
4	15.5	24.6	65	0.028	9:33:57	5-Jun-14
5	13.3	25.3	64	0.028	9:48:57	5-Jun-14
6	14.1	25.8	62	0.0282	10:03:57	5-Jun-14
7	11.6	26.1	60	0.028	10:18:57	5-Jun-14
8	9.9	26.2	61	0.028	10:33:57	5-Jun-14
9	10.6	26.1	60	0.028	10:48:57	5-Jun-14
10	10.8	25.8	60	0.028	11:03:57	5-Jun-14
11	11.6	25.3	62	0.028	11:18:57	5-Jun-14
12	12	25.2	63	0.028	11:33:57	5-Jun-14
13	12.4	25.1	62	0.028	11:48:57	5-Jun-14
14	13.1	25.2	62	0.028	12:03:57	5-Jun-14
15	13.6	25.1	62	0.028	12:18:57	5-Jun-14
16	16.3	25.1	63	0.028	12:33:57	5-Jun-14
17	20.8	25.3	62	0.0295	12:48:57	5-Jun-14
18	26.3	25.6	61	0.0413	13:03:57	5-Jun-14
19	22.8	25.8	61	0.028	13:18:57	5-Jun-14
20	26.6	25.9	60	0.0367	13:33:57	5-Jun-14
21	28.5	26.2	60	0.0431	13:48:57	5-Jun-14
22	31.4	27.3	59	0.057	14:03:57	5-Jun-14
23	37.7	27.7	57	0.084	14:18:57	5-Jun-14
24	36.1	28	55	0.0764	14:33:57	5-Jun-14
25	36.9	28	55	0.0802	14:48:57	5-Jun-14
26	36.1	29.4	54	0.0768	15:03:57	5-Jun-14
27	37.1	31.2	49	0.08	15:18:57	5-Jun-14

Particulate Air Monitoring Data Ellisville RV007
June 5, 2014

Ellisville (RV007) Down Wind PM-10 Data June 5, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	9.5	21.7	71	1.8143	9:10:52	5-Jun-14
2	14.3	21.8	69	0.8507	9:25:52	5-Jun-14
3	15.1	21.7	69	0.7671	9:40:52	5-Jun-14
4	14.6	21.9	69	0.6706	9:55:52	5-Jun-14
5	14.8	22.2	68	0.7066	10:10:52	5-Jun-14
6	14.3	22.5	67	0.6582	10:25:52	5-Jun-14
7	13.7	23	66	0.6593	10:40:52	5-Jun-14
8	11.1	23.1	65	0.6045	10:55:52	5-Jun-14
9	10.9	23.1	65	0.5413	11:10:52	5-Jun-14
10	12	22.9	65	0.5059	11:25:52	5-Jun-14
11	13.1	22.7	65	0.4982	11:40:52	5-Jun-14
12	13.8	22.5	65	0.4976	11:55:52	5-Jun-14
13	14	22.5	65	0.4921	12:10:52	5-Jun-14
14	14.8	22.6	66	0.4851	12:25:52	5-Jun-14
15	15.9	22.6	66	0.5044	12:40:52	5-Jun-14
16	18.5	22.5	66	0.5267	12:55:52	5-Jun-14
17	21.2	22.6	67	0.5351	13:10:52	5-Jun-14
18	24.3	23	67	0.5631	13:25:52	5-Jun-14
19	25	23.2	67	0.5508	13:40:52	5-Jun-14
20	27	23.3	66	0.5387	13:55:52	5-Jun-14
21	29.6	23.5	66	0.5166	14:10:52	5-Jun-14
22	31.9	23.8	66	0.5147	14:25:52	5-Jun-14
23	36.2	24.2	64	0.517	14:40:52	5-Jun-14
24	36.3	24.7	63	0.5071	14:55:52	5-Jun-14
25	36.4	25	63	0.5034	15:10:52	5-Jun-14
26	37.9	25.3	60	0.5134	15:25:52	5-Jun-14
27	38.3	25.7	60	0.5306	15:40:52	5-Jun-14
28	37.4	26.3	59	0.5358	15:55:52	5-Jun-14

PID (VOC) results Ellisville (RV007)

June 5, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 5, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/5/2014	8:57	0		0		0		0		20.9	
2	6/5/2014	9:12	0		0		0		0		20.9	
3	6/5/2014	9:27	0		0		0		0		20.9	
4	6/5/2014	9:42	0		0		0		0		20.9	
5	6/5/2014	9:57	0		0		0		0		20.9	
6	6/5/2014	10:12	0		0		0		0		20.9	
7	6/5/2014	10:27	0		0		0		0		20.9	
8	6/5/2014	10:42	0		0		0		0		20.9	
9	6/5/2014	10:57	0		0		0		0		20.9	
10	6/5/2014	11:12	0		0		0		0		20.9	
11	6/5/2014	11:27	0		0		0		0		20.9	
12	6/5/2014	11:42	0		0		0		0		20.9	
13	6/5/2014	11:57	0		0		0		0		20.9	
14	6/5/2014	12:12	0		0		0		0		20.9	
15	6/5/2014	12:27	0		0		0		0		20.9	
16	6/5/2014	12:42	0		0		0		0		20.9	
17	6/5/2014	12:57	0		0		0		0		20.9	
18	6/5/2014	13:12	0		0		0		0		20.9	
19	6/5/2014	13:27	0		0		0		0		20.9	
20	6/5/2014	13:42	0		0		0		0		20.9	
21	6/5/2014	13:57	0		0		0		0		20.9	
22	6/5/2014	14:12	0		0		0		0		20.9	
23	6/5/2014	14:27	0		0		0		0		20.9	
24	6/5/2014	14:42	0		0		0		0		20.9	
25	6/5/2014	14:57	0		0		0		0		20.9	
26	6/5/2014	15:12	0		0		0		0		20.9	
27	6/5/2014	15:27	0		0		0		0		20.9	
28	6/5/2014	15:42	0		0		0		0		20.9	

PID (VOC) results Ellisville RV007
June 5, 2014

Ellisville (RV007) Down Wind PID Data June 5, 2014

Line#	Date Time	CO (ppm)	VOC Alarm (ppm)	H2S Alarm (ppm)	LEL Alarm (%)	OXY Alarm (%)
1	6/5/2014 8:58	0.8	0	1	0	20.9
2	6/5/2014 9:13	0.6	0	0.8	0	20.9
3	6/5/2014 9:28	0.4	0	0.6	0	20.9
4	6/5/2014 9:43	0.3	0	0.4	0	20.9
5	6/5/2014 9:58	0.2	0	0.4	0	20.9
6	6/5/2014 10:13	0.2	0	0.3	0	20.9
7	6/5/2014 10:28	0.1	0	0.3	0	20.9
8	6/5/2014 10:43	0.1	0	0.1	0	20.9
9	6/5/2014 10:58	0.4	0	0	0	20.9
10	6/5/2014 11:13	0.2	0	0	0	20.9
11	6/5/2014 11:28	0	0	0	0	20.9
12	6/5/2014 11:43	0	0	0	0	20.9
13	6/5/2014 11:58	0	0	0	0	20.9
14	6/5/2014 12:13	0	0	0	0	20.9
15	6/5/2014 12:28	0	0	0	0	20.9
16	6/5/2014 12:43	0	0	0	0	20.9
17	6/5/2014 12:58	0	0	0	0	20.9
18	6/5/2014 13:13	0	0	0	0	20.9
19	6/5/2014 13:28	0	0	0	0	20.9
20	6/5/2014 13:43	0	0	0	0	20.9
21	6/5/2014 13:58	0	0	0	0	20.9
22	6/5/2014 14:13	0	0	0	0	20.9
23	6/5/2014 14:28	0	0	0	0	20.9
24	6/5/2014 14:43	0	0	0	0	20.9
25	6/5/2014 14:58	0	0	0	0	21
26	6/5/2014 15:13	0	0	0.3	0	20.9
27	6/5/2014 15:28	0	0	2.5	0	20.9

Particulate Air Monitoring Data Ellisville (RV007)

June 6, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data June 6, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	33.1	30.3	49	0.066	11:15:17	6-Jun-14
2	33.2	31.2	47	0.0688	11:30:17	6-Jun-14
3	32.7	32.2	47	0.0649	11:45:17	6-Jun-14
4	32	33	44	0.0649	12:00:17	6-Jun-14
5	32.2	33.6	43	0.0671	12:15:17	6-Jun-14
6	32.2	34.1	42	0.0654	12:30:17	6-Jun-14
7	32.9	33.7	43	0.0689	12:45:17	6-Jun-14
8	33.6	33.4	43	0.0723	13:00:17	6-Jun-14
9	30.5	33.9	41	0.0519	13:15:17	6-Jun-14
10	30.2	34.4	40	0.0508	13:30:17	6-Jun-14
11	30.5	34.2	40	0.0504	13:45:17	6-Jun-14
12	28.7	34.1	41	0.0419	14:00:17	6-Jun-14
13	29.6	34.7	40	0.0509	14:15:17	6-Jun-14
14	28.2	35.7	39	0.0419	14:30:17	6-Jun-14
15	26.2	36.6	37	0.0309	14:45:17	6-Jun-14
16	25.4	36.2	37	0.0291	15:00:17	6-Jun-14
17	25.3	35.7	37	0.0281	15:15:17	6-Jun-14
18	27.6	35.6	39	0.0413	15:30:17	6-Jun-14
19	26	36.6	38	0.0306	15:45:17	6-Jun-14
20	25	36.3	39	0.0287	16:00:17	6-Jun-14
21	25.3	35.4	41	0.0304	16:15:17	6-Jun-14
22	24	34.8	41	0.0286	16:30:17	6-Jun-14
23	23	34.6	42	0.028	16:45:17	6-Jun-14
24	26.2	34.1	46	0.0352	17:00:17	6-Jun-14
25	25.6	33.2	49	0.0327	17:15:17	6-Jun-14
26	27.6	32.5	50	0.0467	17:30:17	6-Jun-14
27	34.4	32	53	0.0812	17:45:17	6-Jun-14
28	28.7	31.4	54	0.054	18:00:17	6-Jun-14
29	29.3	30.8	56	0.0602	18:15:17	6-Jun-14

Particulate Air Monitoring Data Ellisville RV007
June 6, 2014

Ellisville (RV007) Down Wind PM-10 Data June 6, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	27.9	30.5	54	0.49	11:09:02	6-Jun-14
2	30.6	30.1	53	0.5515	11:24:02	6-Jun-14
3	32.2	29.9	54	0.5483	11:39:02	6-Jun-14
4	33.3	29.8	54	0.5684	11:54:02	6-Jun-14
5	34.6	29.8	54	0.5863	12:09:02	6-Jun-14
6	35	29.9	53	0.5753	12:24:02	6-Jun-14
7	35.7	29.8	54	0.5709	12:39:02	6-Jun-14
8	35.5	29.8	53	0.5679	12:54:02	6-Jun-14
9	31.7	29.9	52	0.5096	13:09:02	6-Jun-14
10	31.9	30.2	50	0.5204	13:24:02	6-Jun-14
11	31.8	30.5	49	0.5026	13:39:02	6-Jun-14
12	30.6	30.4	50	0.509	13:54:02	6-Jun-14
13	31.4	30.7	52	0.534	14:09:02	6-Jun-14
14	31	31	52	0.5398	14:24:02	6-Jun-14
15	30.3	31.2	52	0.5277	14:39:02	6-Jun-14
16	29.5	31.4	52	0.5205	14:54:02	6-Jun-14
17	28.3	31.7	51	0.5091	15:09:02	6-Jun-14
18	28.9	31.7	52	0.513	15:24:02	6-Jun-14
19	28.7	31.8	51	0.5121	15:39:02	6-Jun-14
20	28.6	31.7	52	0.5165	15:54:02	6-Jun-14
21	28.9	31.2	53	0.5229	16:09:02	6-Jun-14
22	29.1	30.8	55	0.5429	16:24:02	6-Jun-14
23	29	30.7	57	0.5661	16:39:02	6-Jun-14
24	27	30.6	56	0.5355	16:54:02	6-Jun-14
25	27.9	30	57	0.5866	17:09:02	6-Jun-14
26	28.9	29.6	60	0.6244	17:24:02	6-Jun-14
27	28.9	29.2	61	0.6277	17:39:02	6-Jun-14
28	28.6	28.9	61	0.609	17:54:02	6-Jun-14
29	29.5	28.5	62	0.6431	18:09:02	6-Jun-14

PID (VOC) results Ellisville (RV007)

June 6, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL).

There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 6, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/6/2014	10:52	0		0		0		0		20.9	
2	6/6/2014	11:07	0		0		0		0		20.9	
3	6/6/2014	11:22	0		0		0		0		20.9	
4	6/6/2014	11:37	0		0		0		0		20.9	
5	6/6/2014	11:52	0		0		0		0		20.9	
6	6/6/2014	12:07	0		0		0		0		20.9	
7	6/6/2014	12:22	0		0		0		0		20.9	
8	6/6/2014	12:37	0		0		0		0		20.9	
9	6/6/2014	12:52	0		0		0		0		20.9	
10	6/6/2014	13:07	0		0		0		0		20.9	
11	6/6/2014	13:22	0		0		0		0		20.9	
12	6/6/2014	13:37	0		0		0		0		20.9	
13	6/6/2014	13:52	0		0		0		0		20.9	
14	6/6/2014	14:07	0		0		0		0		20.9	
15	6/6/2014	14:22	0		0		0		0		20.9	
16	6/6/2014	14:37	0		0		0		0		20.9	
17	6/6/2014	14:52	0		0		0		0		20.9	
18	6/6/2014	15:07	0		0		0		0		20.9	
19	6/6/2014	15:22	0		0		0		0		20.9	
20	6/6/2014	15:37	0		0		0		0		20.9	
21	6/6/2014	15:52	0		0		0		0		20.9	
22	6/6/2014	16:07	0		0		0		0		20.9	
23	6/6/2014	16:22	0		0		0		0		20.9	
24	6/6/2014	16:37	0		0		0		0		20.9	
25	6/6/2014	16:52	0		0		0		0		20.9	
26	6/6/2014	17:07	0		0		0		0		20.9	
27	6/6/2014	17:22	0		0		0		0		20.9	
28	6/6/2014	17:37	0		0		0		0		20.9	
29	6/6/2014	17:52	0		0		0		0		20.9	

PID (VOC) results Ellisville RV007
June 6, 2014

Ellisville (RV007) Down Wind PID Data June 6, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm (ppm)	H2S Alarm (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	6/6/2014	10:59	0.9	0	2.3	0	20.9	
2	6/6/2014	11:14	1	0	2.9	0	20.9	
3	6/6/2014	11:29	0.9	0	4.3	0	20.9	
4	6/6/2014	11:44	0.9	0	5.1	0	20.9	
5	6/6/2014	11:59	0.8	0	6.1	0	20.9	
6	6/6/2014	12:14	0.8	0	4.2	0	21.2	
7	6/6/2014	12:29	0.6	0	3.2	0	21.2	
8	6/6/2014	12:44	0.4	0	2.6	0	21.1	
9	6/6/2014	12:59	0.4	0	2.5	0	21.1	
10	6/6/2014	13:14	0.4	0	2.5	0	21.2	
11	6/6/2014	13:29	0.3	0	2	0	21.2	
12	6/6/2014	13:44	0.2	0	1.8	0	21.2	
13	6/6/2014	13:59	0.2	0	1.8	0	21.2	
14	6/6/2014	14:14	0.2	0	1.8	0	21	
15	6/6/2014	14:29	0.4	0	1.9	0	21.2	
16	6/6/2014	14:44	0.3	0	1.2	0	21.2	
17	6/6/2014	14:59	0.2	0	0.8	0	21.2	
18	6/6/2014	15:14	0	0	0.9	0	21.2	
19	6/6/2014	15:29	0.3	0	1.3	0	21.2	
20	6/6/2014	15:44	0.2	0	0.5	0	21.2	
21	6/6/2014	15:59	0.1	0	0.1	0	21.2	
22	6/6/2014	16:14	0	0	0	0	21.2	
23	6/6/2014	16:29	0	0	0	0	21.2	
24	6/6/2014	16:44	0	0	0	0	21.2	
25	6/6/2014	16:59	0	0	0	0	21.2	
26	6/6/2014	17:14	0	0	0	0	21.1	
27	6/6/2014	17:29	0	0	0	0	20.9	
28	6/6/2014	17:44	0	0	0	0	20.9	
29	6/6/2014	17:59	0	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

June 9, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data June 9, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	13.6	26	54	0.0284	9:30:16	9-Jun-14
2	14.1	25.7	56	0.028	9:45:16	9-Jun-14
3	13.7	26.4	57	0.028	10:00:16	9-Jun-14
4	12.9	28.2	54	0.028	10:15:16	9-Jun-14
5	12.3	30.7	48	0.028	10:30:16	9-Jun-14
6	11.9	31.6	45	0.028	10:45:16	9-Jun-14
7	11.9	31	45	0.028	11:00:16	9-Jun-14
8	13.4	30.2	46	0.028	11:15:16	9-Jun-14
9	12.1	30.1	47	0.028	11:30:16	9-Jun-14
10	12	30.1	46	0.028	11:45:16	9-Jun-14
11	12.5	29.8	45	0.028	12:00:16	9-Jun-14
12	12.2	30.2	45	0.028	12:15:16	9-Jun-14
13	12.6	30.5	45	0.028	12:30:16	9-Jun-14
14	13.7	30.2	45	0.028	12:45:16	9-Jun-14
15	14.8	28.7	48	0.028	13:00:16	9-Jun-14
16	16.1	27.5	52	0.028	13:15:16	9-Jun-14
17	19.5	26.7	54	0.0282	13:30:16	9-Jun-14
18	18.3	26.3	56	0.0295	13:45:16	9-Jun-14
19	16.5	26.2	56	0.028	14:00:16	9-Jun-14
20	18.1	26.8	54	0.028	14:15:16	9-Jun-14
21	16.6	27	53	0.0282	14:30:16	9-Jun-14
22	14.1	26.6	53	0.028	14:45:16	9-Jun-14
23	14.1	26.3	54	0.028	15:00:16	9-Jun-14
24	14.6	26.2	55	0.028	15:15:16	9-Jun-14
25	15.3	26.4	55	0.028	15:30:16	9-Jun-14
26	15.6	26.5	56	0.028	15:45:16	9-Jun-14
27	15.9	26.6	55	0.028	16:00:16	9-Jun-14
28	17.2	26.1	54	0.0307	16:15:16	9-Jun-14

Particulate Air Monitoring Data Ellisville RV007
June 9, 2014

Ellisville (RV007) Down Wind PM-10 Data June 9, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	14.4	25.6	57	0.5327	9:26:33	9-Jun-14
2	14.5	26.6	57	0.5672	9:41:33	9-Jun-14
3	14.3	27	56	0.512	9:56:33	9-Jun-14
4	14.6	27.2	56	0.5003	10:11:33	9-Jun-14
5	14.6	27.5	55	0.4977	10:26:33	9-Jun-14
6	14.2	27.5	56	0.4707	10:41:33	9-Jun-14
7	14	27.6	56	0.4615	10:56:33	9-Jun-14
8	14	27.6	55	0.4589	11:11:33	9-Jun-14
9	14	27.6	55	0.4585	11:26:33	9-Jun-14
10	13.5	27.6	53	0.4177	11:41:33	9-Jun-14
11	13.9	27.7	53	0.3905	11:56:33	9-Jun-14
12	14.5	28	53	0.4088	12:11:33	9-Jun-14
13	14.7	28.1	53	0.3821	12:26:33	9-Jun-14
14	15.9	27.9	53	0.3707	12:41:33	9-Jun-14
15	17.3	27.1	55	0.3762	12:56:33	9-Jun-14
16	18.1	26.2	59	0.3653	13:11:33	9-Jun-14
17	17.7	25.5	60	0.3726	13:26:33	9-Jun-14
18	17.4	25.1	60	0.3863	13:41:33	9-Jun-14
19	16.6	25	60	0.401	13:56:33	9-Jun-14
20	15.9	25.4	59	0.4042	14:11:33	9-Jun-14
21	15.8	25.5	58	0.3845	14:26:33	9-Jun-14
22	15.7	25.4	58	0.3836	14:41:33	9-Jun-14
23	16	25.2	58	0.3813	14:56:33	9-Jun-14
24	16.9	25.2	60	0.3789	15:11:33	9-Jun-14
25	17.7	25.2	61	0.382	15:26:33	9-Jun-14
26	17.8	25.3	60	0.3612	15:41:33	9-Jun-14
27	17.5	25.2	60	0.3622	15:56:33	9-Jun-14
28	16.9	24.9	57	0.3691	16:11:33	9-Jun-14
29	17.3	24.7	57	0.362	16:26:33	9-Jun-14
30	18.1	24.6	57	0.3504	16:41:33	9-Jun-14

PID (VOC) results Ellisville (RV007)

June 9, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL).

There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 9, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/9/2014	9:09	0		0		0		0		20.9	
2	6/9/2014	9:24	0		0		0		0		20.9	
3	6/9/2014	9:39	0		0		0		0		20.9	
4	6/9/2014	9:54	0		0		0		0		20.9	
5	6/9/2014	10:09	0		0		0		0		20.9	
6	6/9/2014	10:24	0		0		0		0		20.9	
7	6/9/2014	10:39	0		0		0		0		20.9	
8	6/9/2014	10:54	0		0		0		0		20.9	
9	6/9/2014	11:09	0		0		0		0		20.9	
10	6/9/2014	11:24	0		0		0		0		20.9	
11	6/9/2014	11:39	0		0		0		0		20.9	
12	6/9/2014	11:54	0		0		0		0		20.9	
13	6/9/2014	12:09	0		0		0		0		20.9	
14	6/9/2014	12:24	0		0		0		0		20.9	
15	6/9/2014	12:39	0		0		0		0		20.9	
16	6/9/2014	12:54	0		0		0		0		20.9	
17	6/9/2014	13:09	0		0		0		0		20.9	
18	6/9/2014	13:24	0		0		0		0		20.9	
19	6/9/2014	13:39	0		0		0		0		20.9	
20	6/9/2014	13:54	0		0		0		0		20.9	
21	6/9/2014	14:09	0		0		0		0		20.9	
22	6/9/2014	14:24	0		0		0		0		20.9	
23	6/9/2014	14:39	0		0		0		0		20.9	
24	6/9/2014	14:54	0		0		0		0		20.9	
25	6/9/2014	15:09	0		0		0		0		20.9	
26	6/9/2014	15:24	0		0		0		0		20.9	
27	6/9/2014	15:39	0		0		0		0		20.9	
28	6/9/2014	15:54	0		0		0		0		20.9	
29	6/9/2014	16:09	0		0		0		0		20.9	
30	6/9/2014	16:24	0		0		0		0		20.9	

PID (VOC) results Ellisville RV007
June 9, 2014

Ellisville (RV007) Down Wind PID Data June 9, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	(ppm)	H2S Alarm	(ppm)	LEL Alarm	(%)	OXY Alarm	(%)	Alarm
1	6/9/2014	9:07	0.9	0		1.1	0		20.7			
2	6/9/2014	9:22	1.9	0		1.4	0		20.8			
3	6/9/2014	9:37	0.5	0		1.8	0		20.8			
4	6/9/2014	9:52	1.5	0		2.6	0		20.8			
5	6/9/2014	10:07	1.8	0		4	0		20.8			
6	6/9/2014	10:22	0.6	0		3.4	0		20.9			
7	6/9/2014	10:37	0.3	0		2.1	0		20.9			
8	6/9/2014	10:52	0.3	0		1.1	0		20.9			
9	6/9/2014	11:07	0.1	0		0.6	0		20.9			
10	6/9/2014	11:22	0.1	0		0.3	0		20.9			
11	6/9/2014	11:37	0.1	0		0.1	0		20.9			
12	6/9/2014	11:52	0	0		0.1	0		20.9			
13	6/9/2014	12:07	0	0		0	0		20.9			
14	6/9/2014	12:22	0	0		0	0		20.9			
15	6/9/2014	12:37	0	0		0	0		20.9			
16	6/9/2014	12:52	0	0		0	0		20.9			
17	6/9/2014	13:07	0	0		0	0		20.9			
18	6/9/2014	13:22	0	0		0	0		20.9			
19	6/9/2014	13:37	0	0		0	0		20.9			
20	6/9/2014	13:52	0	0		0	0		20.9			
21	6/9/2014	14:07	0	0		0	0		20.9			
22	6/9/2014	14:22	0	0		0	0		20.9			
23	6/9/2014	14:37	0	0		0	0		20.9			
24	6/9/2014	14:52	0	0		0	0		20.8			
25	6/9/2014	15:07	0	0		0	0		20.8			
26	6/9/2014	15:22	0	0		0	0		20.8			
27	6/9/2014	15:37	0	0		0	0		20.9			
28	6/9/2014	15:52	0	0		0	0		20.9			

Particulate Air Monitoring Data Ellisville (RV007)

June 11, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data June 11, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	8.6	24.6	67	3.778	14:21:01 AM	11-Jun-14
2	8.9	25.1	67	3.9239	14:36:01 AM	11-Jun-14
3	6.4	25.2	66	3.698	14:51:01 AM	11-Jun-14
4	6.1	24.9	67	3.3233	15:06:01 AM	11-Jun-14

Ellisville (RV007) Down Wind PM-10 Data June 11, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	14.8	23.3	65	0.3609	13:51:53	11-Jun-14
2	18.5	22.9	69	0.3796	14:06:53	11-Jun-14
3	20	22.9	70	0.388	14:21:53	11-Jun-14
4	19.5	23.1	71	0.379	14:36:53	11-Jun-14
5	18.4	23.2	71	0.3734	14:51:53	11-Jun-14
6	17.7	23	71	0.3606	15:06:53	11-Jun-14
7	16.9	22.8	71	0.3482	15:21:53	11-Jun-14

PID (VOC) results Ellisville (RV007)

June 11, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 11, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/11/2014	13:41	0		0.5		0		0		20.8	
2	6/11/2014	13:56	0		0.4		0		0		21.1	
3	6/11/2014	14:11	0		0.4		0		0		20.9	
4	6/11/2014	14:26	0		0.3		0		0		20.9	
5	6/11/2014	14:41	0		0.3		0		0		20.9	
6	6/11/2014	14:56	0		0.3		0		0		20.9	
7	6/11/2014	15:11	0		0.3		0		0		20.9	

Ellisville (RV007) Down Wind PID Data June 11, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/11/2014	13:34	0.4		0		0.1		0		20.9	
2	6/11/2014	13:49	0.3		0		0		0		20.9	
3	6/11/2014	14:04	0.2		0		0		0		20.9	
4	6/11/2014	14:19	0.1		0		0		0		20.9	
5	6/11/2014	14:34	0.1		0		0		0		20.9	
6	6/11/2014	14:49	0.1		0		0		0		20.9	
7	6/11/2014	15:04	0		0		0		0		20.9	

Particulate Air Monitoring Data Ellisville (RV007)

June 17, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

No upwind data due to equipment malfunction.

Ellisville (RV007) Down Wind PM-10 Data June 17, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	104	25.8	71	2.034	13:13:47	17-Jun-14
2	107.6	27.8	72	1.8236	13:28:47	17-Jun-14
3	107.7	29.2	69	1.8094	13:43:47	17-Jun-14
4	106.7	30.6	65	1.7244	13:58:47	17-Jun-14
5	106	31.6	62	1.7314	14:13:47	17-Jun-14
6	107.9	32.1	59	1.7522	14:28:47	17-Jun-14
7	106.9	32.6	58	1.7883	14:43:47	17-Jun-14
8	106.4	32.9	56	1.6731	14:58:47	17-Jun-14
9	106.7	33.2	55	1.6412	15:13:47	17-Jun-14
10	106.8	33.2	54	1.6446	15:28:47	17-Jun-14
11	106.8	33.1	54	1.6466	15:43:47	17-Jun-14
12	107.1	33	54	1.6223	15:58:47	17-Jun-14
13	110	32.8	55	1.777	16:13:47	17-Jun-14
14	106.5	32.6	54	1.6646	16:28:47	17-Jun-14

PID (VOC) results Ellisville (RV007)

June 17, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 17, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/17/2014	13:06	0.3		0		0		0		21	
2	6/17/2014	13:21	0.2		0		0		0		21.2	
3	6/17/2014	13:36	0.3		0		0		0		21.2	
4	6/17/2014	13:51	0.2		0		0		0		21.2	
5	6/17/2014	14:06	0.3		0		0		0		21.3	
6	6/17/2014	14:21	0.3		0		0		0		21.3	
7	6/17/2014	14:36	0.2		0		0		0		21.3	
8	6/17/2014	14:51	0.2		0		0		0		21.4	
9	6/17/2014	15:06	0.2		0		0		0		21.4	
10	6/17/2014	15:21	0.1		0		0		0		21.4	
11	6/17/2014	15:36	0.1		0		0		0		21.4	
12	6/17/2014	15:51	0		0		0		0		21.4	
13	6/17/2014	16:06	0		0		0		0		21.4	
14	6/17/2014	16:21	0		0		0		0		21.4	

Ellisville (RV007) Down Wind PID Data June 17, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/17/2014	12:59	0		0		0		0		20.9	
2	6/17/2014	13:14	0		0		0		0		20.9	
3	6/17/2014	13:29	0		0		0		0		20.9	
4	6/17/2014	13:44	0		0		0		0		20.9	
5	6/17/2014	13:59	0.1		0		0		0		20.9	
6	6/17/2014	14:14	0.1		0		0		0		20.9	
7	6/17/2014	14:29	0.1		0		0		0		20.9	
8	6/17/2014	14:44	0.1		0		0		0		20.9	
9	6/17/2014	14:59	0.1		0		0		0		20.9	
10	6/17/2014	15:14	0.1		0		0		0		20.9	
11	6/17/2014	15:29	0.1		0		0		0		20.9	
12	6/17/2014	15:44	0		0		0		0		20.9	
13	6/17/2014	15:59	0		0		0		0		20.9	
14	6/17/2014	16:14	0		0		0		0		20.9	

Particulate Air Monitoring Data Ellisville (RV007)

June 18, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data June 18, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	28.2	29.1	62	1.1087	13:24:03	18-Jun-14
2	27.9	30.8	63	1.0638	13:39:03	18-Jun-14
3	25.3	31.9	60	1.0223	13:54:03	18-Jun-14
4	36	32.6	59	1.0794	14:09:03	18-Jun-14
5	24.1	33.4	56	2.0458	14:24:03	18-Jun-14
6	36.9	33.8	54	1.3904	14:39:03	18-Jun-14
7	26.1	34.1	54	1.4371	14:54:03	18-Jun-14
8	18.4	34.5	52	0.8112	15:09:03	18-Jun-14
9	34.2	34.7	51	1.6171	15:24:03	18-Jun-14
10	21.2	34.7	50	1.0006	15:39:03	18-Jun-14
11	21.2	34.7	51	1.0085	15:54:03	18-Jun-14

Ellisville (RV007) Down Wind PM-10 Data June 18, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	28.2	29.1	62	1.1087	13:24:03	18-Jun-14
2	27.9	30.8	63	1.0638	13:39:03	18-Jun-14
3	25.3	31.9	60	1.0223	13:54:03	18-Jun-14
4	36	32.6	59	1.0794	14:09:03	18-Jun-14
5	24.1	33.4	56	2.0458	14:24:03	18-Jun-14
6	36.9	33.8	54	1.3904	14:39:03	18-Jun-14
7	26.1	34.1	54	1.4371	14:54:03	18-Jun-14
8	18.4	34.5	52	0.8112	15:09:03	18-Jun-14
9	34.2	34.7	51	1.6171	15:24:03	18-Jun-14
10	21.2	34.7	50	1.0006	15:39:03	18-Jun-14
11	21.2	34.7	51	1.0085	15:54:03	18-Jun-14
12	96.9	34.7	49	1.5521	16:07:54	18-Jun-14

PID (VOC) results Ellisville (RV007)

June 18, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 18, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	6/18/2014	13:12	0	0	0.2	0	20.8	
2	6/18/2014	13:27	0	0	0.7	0	20.8	
3	6/18/2014	13:42	0	0	0.8	0	20.9	
4	6/18/2014	13:57	0	0	0.7	0	20.9	
5	6/18/2014	14:12	0	0	0.6	0	20.9	
6	6/18/2014	14:27	0	0	0.4	0	20.9	
7	6/18/2014	14:42	0	0	0.3	0	20.9	
8	6/18/2014	14:57	0	0	0.1	0	20.9	
9	6/18/2014	15:12	0	0	0	0	20.9	
10	6/18/2014	15:27	0	0	0	0	20.9	
11	6/18/2014	15:42	0	0	0	0	20.9	

Ellisville (RV007) Down Wind PID Data June 18, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	6/18/2014	13:05	0	0	0	0	20.8	
2	6/18/2014	13:20	0	0	0	0	20.9	
3	6/18/2014	13:35	0.1	0	0	0	20.9	
4	6/18/2014	13:50	0.1	0	0	0	20.9	
5	6/18/2014	14:05	0.2	0	0	0	20.9	
6	6/18/2014	14:20	0.2	0	0	0	20.9	
7	6/18/2014	14:35	0.1	0	0	0	20.9	
8	6/18/2014	14:50	0.1	0	0	0	20.9	
9	6/18/2014	15:05	0.1	0	0	0	20.9	
10	6/18/2014	15:20	0.1	0	0	0	20.9	
11	6/18/2014	15:35	0.1	0	0	0	20.9	
12	6/18/2014	15:50	0.1	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

June 19, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data June 19, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	28.2	29.1	62	1.1087	13:24:03	18-Jun-14
2	27.9	30.8	63	1.0638	13:39:03	18-Jun-14
3	25.3	31.9	60	1.0223	13:54:03	18-Jun-14
4	36	32.6	59	1.0794	14:09:03	18-Jun-14
5	24.1	33.4	56	2.0458	14:24:03	18-Jun-14
6	36.9	33.8	54	1.3904	14:39:03	18-Jun-14
7	26.1	34.1	54	1.4371	14:54:03	18-Jun-14
8	18.4	34.5	52	0.8112	15:09:03	18-Jun-14
9	34.2	34.7	51	1.6171	15:24:03	18-Jun-14
10	21.2	34.7	50	1.0006	15:39:03	18-Jun-14
11	21.2	34.7	51	1.0085	15:54:03	18-Jun-14

Ellisville (RV007) Down Wind PM-10 Data June 19, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	time	Date
1	75	25.3	64	2.5041	16:33:09	19-Jun-14
2	102.8	27.6	65	2.0529	16:48:09	19-Jun-14
3	90.5	29.1	63	1.5434	17:03:09	19-Jun-14
4	91.7	30	63	1.5568	17:18:09	19-Jun-14

PID (VOC) results Ellisville (RV007)

June 19, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

No up-wind data due to equipment malfunction.

Ellisville (RV007) Down Wind PID Data June 19, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY (%)	Alarm
1	6/19/2014	16:21	0	0	0	0	20.9	
2	6/19/2014	16:36	0	0	0	0	20.9	
3	6/19/2014	16:51	0	0	0	0	20.9	
4	6/19/2014	17:06	0	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

June 20, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 20, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	6/20/2014	12:51	0		0		0		0		20.9	
2	6/20/2014	13:06	0		0		0		0		20.9	
3	6/20/2014	13:21	0		0		0		0		20.9	
4	6/20/2014	13:36	0		0		0		0		20.9	
5	6/20/2014	13:51	0		0		0		0		20.9	
6	6/20/2014	14:06	0		0		0		0		20.9	
7	6/20/2014	14:21	0		0		0		0		20.9	
8	6/20/2014	14:36	0		0		0		0		20.9	
9	6/20/2014	14:51	0		0		0		0		20.9	
10	6/20/2014	15:06	0		0		0		0		20.9	
11	6/20/2014	15:21	0		0		0		0		20.9	
12	6/20/2014	15:36	0		0		0		0		20.9	
13	6/20/2014	15:51	0		0		0		0		20.9	
14	6/20/2014	16:06	0		0		0		0		20.9	
15	6/20/2014	16:21	0		0		0		0		20.9	
16	6/20/2014	16:36	0		0		0		0		20.9	
17	6/20/2014	16:51	0		0		0		0		20.9	

Particulate Air Monitoring Date Ellisville RV007
June 20, 2014

Ellisville (RV007) Down Wind PID Data June 20, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	6/20/2014	12:58	0	0	0	0	20.8	
2	6/20/2014	13:13	0	0	0	0	20.9	
3	6/20/2014	13:28	0	0	0	0	20.9	
4	6/20/2014	13:43	0	0	0	0	20.9	
5	6/20/2014	13:58	0	0	0	0	20.9	
6	6/20/2014	14:13	0	0	0	0	20.9	
7	6/20/2014	14:28	0	0	0	0	20.9	
8	6/20/2014	14:43	0	0	0	0	20.9	
9	6/20/2014	14:58	0	0	0	0	20.9	
10	6/20/2014	15:13	0	0	0	0	20.9	
11	6/20/2014	15:28	0	0	0	0	20.9	
12	6/20/2014	15:43	0	0	0	0	20.9	
13	6/20/2014	15:58	0	0	0	0	20.9	
14	6/20/2014	16:13	0	0	0	0	20.9	
15	6/20/2014	16:28	0	0	0	0	20.9	
16	6/20/2014	16:43	0	0	0	0	20.9	
17	6/20/2014	16:58	0	0	0	0	20.9	

PID (VOC) results Ellisville (RV007)

June 20, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 20, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY (%)	Alarm
1	6/20/2014	12:51	0	0	0	0	20.9	
2	6/20/2014	13:06	0	0	0	0	20.9	
3	6/20/2014	13:21	0	0	0	0	20.9	
4	6/20/2014	13:36	0	0	0	0	20.9	
5	6/20/2014	13:51	0	0	0	0	20.9	
6	6/20/2014	14:06	0	0	0	0	20.9	
7	6/20/2014	14:21	0	0	0	0	20.9	
8	6/20/2014	14:36	0	0	0	0	20.9	
9	6/20/2014	14:51	0	0	0	0	20.9	
10	6/20/2014	15:06	0	0	0	0	20.9	
11	6/20/2014	15:21	0	0	0	0	20.9	
12	6/20/2014	15:36	0	0	0	0	20.9	
13	6/20/2014	15:51	0	0	0	0	20.9	
14	6/20/2014	16:06	0	0	0	0	20.9	
15	6/20/2014	16:21	0	0	0	0	20.9	
16	6/20/2014	16:36	0	0	0	0	20.9	
17	6/20/2014	16:51	0	0	0	0	20.9	

PID (VOC) results Ellisville RV007
June 20, 2014

Ellisville (RV007) Down Wind PID Data June 20, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	6/20/2014	12:58	0	0	0	0	20.8	
2	6/20/2014	13:13	0	0	0	0	20.9	
3	6/20/2014	13:28	0	0	0	0	20.9	
4	6/20/2014	13:43	0	0	0	0	20.9	
5	6/20/2014	13:58	0	0	0	0	20.9	
6	6/20/2014	14:13	0	0	0	0	20.9	
7	6/20/2014	14:28	0	0	0	0	20.9	
8	6/20/2014	14:43	0	0	0	0	20.9	
9	6/20/2014	14:58	0	0	0	0	20.9	
10	6/20/2014	15:13	0	0	0	0	20.9	
11	6/20/2014	15:28	0	0	0	0	20.9	
12	6/20/2014	15:43	0	0	0	0	20.9	
13	6/20/2014	15:58	0	0	0	0	20.9	
14	6/20/2014	16:13	0	0	0	0	20.9	
15	6/20/2014	16:28	0	0	0	0	20.9	
16	6/20/2014	16:43	0	0	0	0	20.9	
17	6/20/2014	16:58	0	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

June 24, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

No Upwind Data Captured

Ellisville (RV007) Down wind Wind PM-10 Data June 24, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	19	25.8	69	0.5203	10:28:18	24-Jun-14
2	28.9	26.3	72	0.433	10:43:18	24-Jun-14
3	29.4	26.6	72	0.4346	10:58:18	24-Jun-14
4	29.2	27.2	71	0.4299	11:13:18	24-Jun-14
5	29.1	27.5	69	0.4255	11:28:18	24-Jun-14
6	28.8	27.9	69	0.4201	11:43:18	24-Jun-14
7	27.6	28.2	67	0.4108	11:58:18	24-Jun-14
8	27.4	28.6	65	0.41	12:13:18	24-Jun-14
9	27.1	28.8	63	0.4065	12:28:18	24-Jun-14
10	26.4	29.1	62	0.393	12:43:18	24-Jun-14
11	26.6	29.4	61	0.401	12:58:18	24-Jun-14
12	26.6	29.5	62	0.3848	13:13:18	24-Jun-14
13	26.6	29.3	62	0.3941	13:28:18	24-Jun-14
14	26.1	29.4	62	0.3901	13:43:18	24-Jun-14
15	25.7	29.7	62	0.3877	13:58:18	24-Jun-14
16	24.8	29.9	58	0.3847	14:13:18	24-Jun-14
17	24.6	30.1	56	0.3798	14:28:18	24-Jun-14
18	23.9	30.3	55	0.3779	14:43:18	24-Jun-14
19	24	30.5	53	0.3883	14:58:18	24-Jun-14
20	23.6	30.5	53	0.378	15:13:18	24-Jun-14

PID (VOC) results Ellisville (RV007)

June 24, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data June 24, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	6/24/2014	10:11	0	0	0	0	20.9	
2	6/24/2014	10:26	0	0	0.1	0	20.9	
3	6/24/2014	10:41	0	0	0	0	20.9	
4	6/24/2014	10:56	0	0	0	0	21	
5	6/24/2014	11:11	0	0	0	0	21.1	
6	6/24/2014	11:26	0	0	0	0	21.2	
7	6/24/2014	11:41	0	0	0	0	21.1	
8	6/24/2014	11:56	0	0	0	0	20.9	
9	6/24/2014	12:11	0	0	0	0	20.9	
10	6/24/2014	12:26	0	0	0	0	21.1	
11	6/24/2014	12:41	0	0	0	0	21.1	
12	6/24/2014	12:56	0	0	0	0	21.1	
13	6/24/2014	13:11	0	0	0	0	21.1	
14	6/24/2014	13:26	0	0	0	0	21.1	
15	6/24/2014	13:41	0	0	0	0	21.1	
16	6/24/2014	13:56	0	0	0	0	21.1	
17	6/24/2014	14:11	0	0	0	0	21.1	
18	6/24/2014	14:26	0	0	0	0	21.1	
19	6/24/2014	14:41	0	0	0	0	21.2	
20	6/24/2014	14:56	0	0	0	0	21.2	
21	6/24/2014	15:11	0	0	0	0	21.2	

PID (VOC) results Ellisville RV007
June 24, 2014

Ellisville (RV007) Down Wind PID Data June 24, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	6/24/2014	10:10	0.3	0	0	0	20.9	
2	6/24/2014	10:25	0.2	0	0	0	20.9	
3	6/24/2014	10:40	0.2	0	0	0	20.9	
4	6/24/2014	10:55	0.1	0	0	0	20.9	
5	6/24/2014	11:10	0.1	0	0	0	20.9	
6	6/24/2014	11:25	0.1	0	0	0	20.9	
7	6/24/2014	11:40	0	0	0	0	20.9	
8	6/24/2014	11:55	0	0	0	0	20.9	
9	6/24/2014	12:10	0	0	0	0	20.9	
10	6/24/2014	12:25	0	0	0	0	20.9	
11	6/24/2014	12:40	0	0	0	0	20.9	
12	6/24/2014	12:55	0	0	0	0	20.9	
13	6/24/2014	13:10	0	0	0	0	20.9	
14	6/24/2014	13:25	0.1	0	0	0	20.9	
15	6/24/2014	13:40	0.1	0	0	0	20.9	
16	6/24/2014	13:55	0.1	0	0	0	20.9	
17	6/24/2014	14:10	0.1	0	0	0	20.9	
18	6/24/2014	14:25	0.1	0	0	0	20.9	
19	6/24/2014	14:40	0.1	0	0	0	20.9	
20	6/24/2014	14:55	0.1	0	0	0	20.9	
21	6/24/2014	15:10	0.1	0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

July 8, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data July 8, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter		
1	21.8	26	67	0.321	11:04:26	8-Jul-14
2	27.2	26.9	67	0.3386	11:19:26	8-Jul-14
3	29.3	28.1	65	0.3374	11:34:26	8-Jul-14
4	29.7	29	62	0.3337	11:49:26	8-Jul-14
5	30	29.4	61	0.3295	12:04:26	8-Jul-14
6	30.3	29.7	60	0.3265	12:19:26	8-Jul-14
7	30.9	29.7	59	0.3305	12:34:26	8-Jul-14
8	34	29.8	58	0.3394	12:49:26	8-Jul-14
9	31.7	30	58	0.3333	13:04:26	8-Jul-14
10	30.7	30.1	56	0.3254	13:19:26	8-Jul-14
11	30.5	30.2	55	0.3214	13:34:26	8-Jul-14
12	30.4	30.2	52	0.3242	13:49:26	8-Jul-14
13	30.4	30	52	0.3196	14:04:26	8-Jul-14
14	30.4	30	52	0.3167	14:19:26	8-Jul-14
15	30.4	30.1	51	0.3157	14:34:26	8-Jul-14
16	30.3	30.2	52	0.3153	14:49:26	8-Jul-14
17	30.7	30.3	51	0.3133	15:04:26	8-Jul-14
18	31.2	30.3	51	0.3157	15:19:26	8-Jul-14
19	31.2	30.3	51	0.3111	15:34:26	8-Jul-14

Particulate Air Monitoring Data Ellisville RV007
July 8, 2014

Ellisville (RV007) Down wind Wind PM-10 Data July 8, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter			
1	4.8	25.8	66	0.4353	10:51:07	8-Jul-14	
2	5.5	27.9	65	0.5805	11:06:07	8-Jul-14	
3	4.5	30.3	61	0.4036	11:21:07	8-Jul-14	
4	4.7	33.2	54	0.4157	11:36:07	8-Jul-14	
5	4.1	34.3	50	0.3909	11:51:07	8-Jul-14	
6	4.4	34.4	49	0.3888	12:06:07	8-Jul-14	
7	4.6	34.3	48	0.3868	12:21:07	8-Jul-14	
8	4.9	33.7	49	0.386	12:36:07	8-Jul-14	
9	7.7	33.6	49	0.4288	12:51:07	8-Jul-14	
10	5.7	33	49	0.4192	13:06:07	8-Jul-14	
11	4.9	32.5	50	0.3684	13:21:07	8-Jul-14	
12	4.5	32	50	0.3649	13:36:07	8-Jul-14	
13	5	31.6	49	0.3797	13:51:07	8-Jul-14	
14	4.7	31.4	49	0.3655	14:06:07	8-Jul-14	
15	4.6	31.3	50	0.3662	14:21:07	8-Jul-14	
16	4.8	31.3	50	0.3506	14:36:07	8-Jul-14	
17	4.7	31.4	50	0.3533	14:51:07	8-Jul-14	
18	5.9	31.3	50	0.3631	15:06:07	8-Jul-14	
19	5.4	31.2	50	0.3183	15:21:07	8-Jul-14	
20	5.4	31.4	50	0.3224	15:36:07	8-Jul-14	

PID (VOC) results Ellisville (RV007)

July 8, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data July 8, 2014

Line#	Date	Time	CO (ppm)	Alarm	VOC (ppm)	Alarm	H2S (ppm)	Alarm	LEL (%)	Alarm	OXY (%)	Alarm
1	7/8/2014	10:38	0		0		0		0		20.9	
2	7/8/2014	10:53	0		0		0		0		20.9	
3	7/8/2014	11:08	0		0		0		0		20.9	
4	7/8/2014	11:23	0		0		0		0		20.9	
5	7/8/2014	11:38	0		0		0		0		20.9	
6	7/8/2014	11:53	0		0		0		0		20.9	
7	7/8/2014	12:08	0		0		0		0		20.9	
8	7/8/2014	12:23	0		0		0		0		20.9	
9	7/8/2014	12:38	0		0		0		0		20.9	
10	7/8/2014	12:53	0		0		0		0		20.9	
11	7/8/2014	13:08	0		0		0		0		20.9	
12	7/8/2014	13:23	0		0		0		0		20.9	
13	7/8/2014	13:38	0		0		0		0		20.9	
14	7/8/2014	13:53	0		0		0		0		20.9	
15	7/8/2014	14:08	0		0		0		0		20.9	
16	7/8/2014	14:23	0		0		0		0		20.9	
17	7/8/2014	14:38	0		0		0		0		20.9	
18	7/8/2014	14:53	0		0		0		0		20.9	
19	7/8/2014	15:08	0		0		0		0		20.9	
20	7/8/2014	15:23	0		0		0		0		20.9	

PID (VOC) results Ellisville RV007
July 8, 2014

Ellisville (RV007) Down Wind PID Data July 8, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	(ppm)	H2S (ppm)	LEL Alarm (%)	OXY (%)	Alarm
1	7/8/2014	10:56	0		0.2	0	0	20.9	
2	7/8/2014	11:11	0		0	0	0	20.8	
3	7/8/2014	11:26	0		0	0.7	0	20.8	
4	7/8/2014	11:41	0		0	0.5	0	20.9	
5	7/8/2014	11:56	0		0	0.1	0	20.9	
6	7/8/2014	12:11	0		0	0	0	21	
7	7/8/2014	12:26	0		0	0	0	21	
8	7/8/2014	12:41	0		0	0	0	21.1	
9	7/8/2014	12:56	0		0	0	0	21	
10	7/8/2014	13:11	0		0	0	0	20.9	
11	7/8/2014	13:26	0		0	0	0	20.9	
12	7/8/2014	13:41	0		0	0	0	20.9	
13	7/8/2014	13:56	0		0	0	0	20.9	
14	7/8/2014	14:11	0		0	0	0	20.9	
15	7/8/2014	14:26	0		0	0	0	20.9	
16	7/8/2014	14:41	0		0	0	0	20.9	
17	7/8/2014	14:56	0		0	0	0	20.9	
18	7/8/2014	15:11	0		0	0	0	20.9	
19	7/8/2014	15:26	0		0	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

July 16, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data July 16, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	25.1	25.6	44	0.773	13:15:15	16-Jul-14
2	25.6	25.7	42	0.7551	13:30:15	16-Jul-14
3	23.8	25.8	42	0.7915	13:45:15	16-Jul-14
4	22.2	25.7	41	0.7496	14:00:15	16-Jul-14
5	22.1	25.7	42	0.6885	14:15:15	16-Jul-14
6	21.2	25.7	42	0.6865	14:30:15	16-Jul-14
7	25.1	25.7	42	0.7915	14:45:15	16-Jul-14
8	24.8	26	41	0.7107	15:00:15	16-Jul-14
9	22.4	25.8	42	0.6842	15:15:15	16-Jul-14
10	23.8	25.6	41	0.6978	15:30:15	16-Jul-14
11	21	25.5	42	0.6687	15:45:15	16-Jul-14
12	21.6	25.7	42	0.6864	16:00:15	16-Jul-14
13	21.7	25.7	42	0.6787	16:15:15	16-Jul-14
14	22.1	25.6	42	0.7157	16:30:15	16-Jul-14

Ellisville (RV007) Down Wind PM-10 Data July 16, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	5.9	27	44	0.5604	13:17:10	16-Jul-14
2	5.7	27.2	42	0.5213	13:32:10	16-Jul-14
3	5.4	27.4	42	0.4861	13:47:10	16-Jul-14
4	7.5	27.5	41	0.7905	14:02:10	16-Jul-14
5	5.8	27.7	41	0.6216	14:17:10	16-Jul-14
6	5.6	27.7	41	0.5524	14:32:10	16-Jul-14
7	6	27.8	41	0.5809	14:47:10	16-Jul-14
8	6.6	27.9	41	0.5658	15:02:10	16-Jul-14
9	5.8	27.7	41	0.5592	15:17:10	16-Jul-14
10	5.1	27.7	40	0.4696	15:32:10	16-Jul-14
11	5.2	27.7	41	0.4658	15:47:10	16-Jul-14
12	5.4	27.9	42	0.5307	16:02:10	16-Jul-14
13	5.5	28.1	41	0.5518	16:17:10	16-Jul-14
14	5.2	28.3	40	0.5156	16:32:10	16-Jul-14

PID (VOC) results Ellisville (RV007)

July 16, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data July 16, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY (%)	Alarm
1	7/16/2014	12:58	0	0	0	0	20.9	
2	7/16/2014	13:13	0	0	0	0	20.9	
3	7/16/2014	13:28	0	0	0	0	20.9	
4	7/16/2014	13:43	0	0	0	0	20.9	
5	7/16/2014	13:58	0	0	0	0	20.9	
6	7/16/2014	14:13	0	0	0	0	20.9	
7	7/16/2014	14:28	0	0	0	0	20.9	
8	7/16/2014	14:43	0	0	0	0	20.9	
9	7/16/2014	14:58	0	0	0	0	20.9	
10	7/16/2014	15:13	0	0	0	0	20.9	
11	7/16/2014	15:28	0	0	0	0	20.9	
12	7/16/2014	15:43	0	0	0	0	20.9	
13	7/16/2014	15:58	0	0	0	0	20.9	
14	7/16/2014	16:13	0	0	0	0	20.9	

Ellisville (RV007) Down Wind PID Data July 16, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	7/16/2014	13:07	0	0.3	0	0	20.9	
2	7/16/2014	13:22	0	0.2	0	0	20.9	
3	7/16/2014	13:37	0	0.2	0	0	20.9	
4	7/16/2014	13:52	0	0.1	0	0	20.9	
5	7/16/2014	14:07	0	0.1	0	0	20.9	
6	7/16/2014	14:22	0	0.1	0	0	20.9	
7	7/16/2014	14:37	0	0.1	0	0	20.9	
8	7/16/2014	14:52	0	0.1	0	0	20.9	
9	7/16/2014	15:07	0	0.1	0	0	20.9	
10	7/16/2014	15:22	0	0.1	0	0	20.9	
11	7/16/2014	15:37	0	0.1	0	0	20.9	
12	7/16/2014	15:52	0	0.1	0	0	20.9	
13	7/16/2014	16:07	0	0.1	0	0	20.9	

Particulate Air Monitoring Data Ellisville (RV007)

July 17, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data July 17, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	6.4	-13.2	36	0.3912	14:03:00	17-Jul-14
2	6.3	-13.2	35	0.3989	14:18:00	17-Jul-14
3	8	-13.2	35	0.5277	14:33:00	17-Jul-14
4	11.9	-13.1	35	0.9344	14:48:00	17-Jul-14
5	6.2	-13.2	35	0.3771	15:03:00	17-Jul-14
6	7.6	-13.2	36	0.4877	15:18:00	17-Jul-14
7	7.9	-13.2	37	0.568	15:33:00	17-Jul-14
8	6.7	-13.2	37	0.4235	15:48:00	17-Jul-14
9	24.6	-12.6	37	1.1943	16:03:00	17-Jul-14
10	35.6	-12	37	1.3054	16:18:00	17-Jul-14
11	22.2	-12.7	37	0.8499	16:33:00	17-Jul-14

Ellisville (RV007) Down Wind PM-10 Data July 17, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	23.1	25.7	43	0.6309	13:50:10	17-Jul-14
2	24	26.6	42	0.6184	14:05:10	17-Jul-14
3	69	27.1	41	1.3042	14:20:10	17-Jul-14
4	29.2	27.3	42	0.8993	14:35:10	17-Jul-14
5	22.5	27.5	41	0.6111	14:50:10	17-Jul-14
6	22	27.6	40	0.5955	15:05:10	17-Jul-14
7	22.2	27.6	42	0.59	15:20:10	17-Jul-14
8	22	27.5	42	0.6044	15:35:10	17-Jul-14
9	22.1	27.5	42	0.6008	15:50:10	17-Jul-14
10	21.9	27.5	42	0.5913	16:05:10	17-Jul-14
11	22.2	27.5	42	0.6065	16:20:10	17-Jul-14
12	22.4	27.5	43	0.749	16:35:10	17-Jul-14

PID (VOC) results Ellisville (RV007)

July 17, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data July 17, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	(ppm)	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	7/17/2014	13:41	0.7		0.2	0	0	20.9	
2	7/17/2014	13:56	0.7		0.1	0.1	0	20.9	
3	7/17/2014	14:11	0.5		0.1	0.1	0	20.9	
4	7/17/2014	14:26	0.4		0.1	0	0	20.9	
5	7/17/2014	14:41	0.2		0.1	0	0	20.9	
6	7/17/2014	14:56	0.1		0	0	0	20.9	
7	7/17/2014	15:11	0.1		0	0	0	20.9	
8	7/17/2014	15:26	0		0	0	0	20.9	
9	7/17/2014	15:41	0		0	0	0	20.9	
10	7/17/2014	15:56	0		0	0	0	20.9	
11	7/17/2014	16:11	0		0	0	0	20.9	

Ellisville (RV007) Down Wind PID Data July 17, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	(ppm)	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	7/17/2014	13:33	0.1		0	0	0	20.9	
2	7/17/2014	13:48	0.1		0	0	0	20.9	
3	7/17/2014	14:03	0.1		0	0	0	20.9	
4	7/17/2014	14:18	0		0	0	0	20.9	
5	7/17/2014	14:33	0		0	0	0	21.1	
6	7/17/2014	14:48	0		0	0	0	21.1	
7	7/17/2014	15:03	0		0	0	0	21.2	
8	7/17/2014	15:18	0		0	0	0	21.2	
9	7/17/2014	15:33	0		0	0	0	21.2	
10	7/17/2014	15:48	0		0	0	0	21.2	
11	7/17/2014	16:03	0		0	0	0	21.2	
12	7/17/2014	16:18	0		0	0	0	21.2	

Particulate Air Monitoring Data Ellisville (RV007)

July 21, 2014

The data provided in the following tables is raw data downloaded from particulate air monitoring instruments positioned near the work zone at Ellisville (RV007). The instruments measure PM10 or particulate matter of 10 micrometers or less which is considered respirable (able to be taken in the body by breathing). A potential source of PM10 at the site is dust from construction activities. Other sources include diesel emissions from equipment operating at the site, mold spores, smoke, smog, soot, etc.

Air monitoring stations are set up-wind of the work zone to record background particulate data and down-wind of the work zone to record particulate data influenced by work activities. Data is collected while crews are active in the work zone.

Ellisville (RV007) Up Wind PM-10 Data July 21, 2014

record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	35.4	27.7	54	2.1258	13:54:48	21-Jul-14
2	39.5	29.6	51	0.3848	14:09:48	21-Jul-14
3	39.6	30.9	48	0.3964	14:24:48	21-Jul-14
4	38.6	31.6	47	0.3931	14:39:48	21-Jul-14
5	39	32.1	45	0.4032	14:54:48	21-Jul-14
6	38.6	32.3	45	0.3943	15:09:48	21-Jul-14
7	38.4	32.4	44	0.3874	15:24:48	21-Jul-14
8	40.3	32.5	43	0.4135	15:39:48	21-Jul-14
9	39.3	32.6	43	0.3945	15:54:48	21-Jul-14
10	39.5	32.8	43	0.3953	16:09:48	21-Jul-14
11	46.4	33	43	0.5016	16:24:48	21-Jul-14
12	39.3	33	43	0.3972	16:39:48	21-Jul-14

Ellisville (RV007) Down Wind PM-10 Data July 21, 2014

Record	(MASS)ug/m3	Temp	RHumidity	Diameter	Time	Date
1	40.5	27.8	55	0.3615	13:50:24	21-Jul-14
2	33.1	30	52	0.3127	14:05:24	21-Jul-14
3	78.4	31.4	48	0.617	14:20:24	21-Jul-14
4	30.8	32.2	47	0.3248	14:35:24	21-Jul-14
5	59.4	32.8	45	0.6796	14:50:24	21-Jul-14
6	449	33.3	44	1.7173	15:05:24	21-Jul-14
7	42.1	33.4	43	0.4481	15:20:24	21-Jul-14
8	97.4	33.5	43	0.7167	15:35:24	21-Jul-14
9	53	33.5	43	0.6017	15:50:24	21-Jul-14
10	38.1	33.4	43	0.351	16:05:24	21-Jul-14
11	227.9	33.4	44	1.6586	16:20:24	21-Jul-14
12	40.4	33.4	43	0.4612	16:35:24	21-Jul-14

PID (VOC) results Ellisville (RV007)

July 21, 2014

The data provided in the following tables is raw data downloaded from photo-ionization detectors or PID's positioned near the work zone at Ellisville (RV007). The PID's are being used at the site to monitor for volatile substances (VOC's), or substances that easily evaporate at normal temperatures. In addition these instruments have sensors that detect Oxygen, Carbon Monoxide, Hydrogen Sulfide and Lower Explosive Limit (LEL). There are no known sources of contamination at the site that would result in volatile off-gassing. Construction activities will result in variability of this data. For example when diesel exhaust is present, VOC levels will temporarily elevate and Oxygen levels will temporarily decrease.

Air monitoring stations are set up-wind of the work zone to record background VOC data and down-wind of the work zone to record VOC data after it has passed through the work zone. Air monitoring is conducted while crews are active in the work zone.

Ellisville (RV007) Upwind PID Data July 21, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	7/21/2014	13:37	0	0	0.4	0	20.9	
2	7/21/2014	13:52	0	0	0.4	0	20.9	
3	7/21/2014	14:07	0	0	0.3	0	20.9	
4	7/21/2014	14:22	0	0	0.3	0	20.9	
5	7/21/2014	14:37	0	0	0.2	0	20.9	
6	7/21/2014	14:52	0	0	0.2	0	20.9	
7	7/21/2014	15:07	0	0	0.1	0	20.9	
8	7/21/2014	15:22	0	0	0.1	0	20.9	
9	7/21/2014	15:37	0	0	0.1	0	20.9	
10	7/21/2014	15:52	0	0	0.1	0	20.9	
11	7/21/2014	16:07	0	0	0.1	0	20.9	
12	7/21/2014	16:22	0	0	0	0	20.9	

Ellisville (RV007) Down Wind PID Data July 21, 2014

Line#	Date	Time	CO (ppm)	VOC Alarm	H2S (ppm)	LEL Alarm (%)	OXY Alarm (%)	Alarm
1	7/21/2014	13:39	0	0.1	0	0	20.9	
2	7/21/2014	13:54	0	0	0	0	20.9	
3	7/21/2014	14:09	0	0	0	0	20.9	
4	7/21/2014	14:24	0	0	0	0	20.9	
5	7/21/2014	14:39	0	0	0	0	20.9	
6	7/21/2014	14:54	0	0	0	0	20.9	
7	7/21/2014	15:09	0	0	0	0	20.9	
8	7/21/2014	15:24	0	0	0	0	20.9	
9	7/21/2014	15:39	0	0	0	0	20.9	
10	7/21/2014	15:54	0	0	0	0	20.9	
11	7/21/2014	16:09	0	0	0	0	20.9	
12	7/21/2014	16:24	0	0	0	0	20.9	

MEMORANDUM

SUBJECT: Ellisville (RV007) Air Monitoring Data SSID:0708
FROM: J. Heath Smith, OSC
ERSB/SUPR
TO: Site File
RE: Air Monitoring Data

This document consists of air monitoring data packages generated during the 2014 Ellisville removal action (RV007). The data packages were generated from real time instruments and provided at <http://www.epaosc.net/ellisville> for public awareness.



J. Heath Smith, OSC

August 13, 2014

Date