Initial Site Characterization

Radford High School Track and Field Excavation
4361 Salt Lake Boulevard
(Portion of TMK No: [1] 9-9-002: Parcel 023)
Honolulu, Oahu, Hawaii

March 21, 2014
Project No. 17012-012148.00/Task 48

Prepared for:

STATE OF HAWAII DEPARTMENT OF EDUCATION
4680 Kalanianaole Highway
Honolulu, Hawaii 96821

Move Forward with Confidence

Prepared by:

BUREAU VERITAS NORTH AMERICA, INC.
Health, Safety, and Environmental Services
841 Bishop Street, Suite 1100
Honolulu, Hawaii 96813
808.531.6708
www.us.bureauveritas.com

CONTENTS

CONTENTS
(Continued)

List of Acronyms

ACM	Asbestos Containing Material
bgs	below ground surface
Bureau Veritas	Bureau Veritas North America, Inc.
COPC	Constituents of Potential Concern
DOE	Department of Education
DRO	Diesel range organics
DU	Decision Unit
EALs	Environmental Action Levels
EHE	Environmental Hazard Evaluation
EHMP	Environmental Hazard Management Plan
EPA	Environmental Protection Agency
ESN	Environmental Services Network Pacific, Inc.
HDOH	State of Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
HQ	Hazard Quotient
IDW	Investigation Derived Waste
mg/kg	milligrams per kilogram
mg/L	milligram per liter
ng/kg	nanograms per kilogram
NVLAP	National Voluntary Laboratory Accreditation Program
PCB	Polychlorinated Biphenyls
PLM	Polarized Light Microscopy
PPE	Personal Protective Equipment
RCRA	Resource Conservation Recovery Act
RL	Reporting Limit
RPD	Relative Percent Difference
RRO	Residual Range Organics
RSD	Relative Standard Deviation
SOP	Standard Operating Procedure
SPLP	Synthetic Precipitation Leaching Procedure
SVOCs	Semi-Volatile Organic Compounds
QA/QC	Quality Assurance/Quality Control
TCDD	tetrachlorodibenzo-p-dioxin
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalent
TGM	Technical Guidance Manual
TMK	Tax Map Key
TPH	Total Petroleum Hydrocarbons
TPH-DRO	Total Petroleum Hydrocarbons as Diesel Range Organics
TPH-RRO	Total Petroleum Hydrocarbons as Residual Range Organics
UIC	Underground Injection Control
USGS	United States Geological Survey
WHO	World Health Organization

Executive Summary

The State of Hawaii Department of Education (DOE) retained Bureau Veritas North America, Inc. (Bureau Veritas) to collect and analyze soil samples and suspect asbestos materials from the track and field area at Radford High School. This report summarizes the data collected at the property described as being located at 4361 Salt Lake Boulevard, Tax Map Key (TMK) Number (1) 9-9-002: Parcel 023 (hereinafter referred to as the "site").

On December 19, 2013 buried debris was encountered during excavation activities at the track and field area of the site. A topographic map from 1953 depicts the site and adjoining areas as a naval reservation located within Makalapa Crater. The topographic maps from 1959 through 2013 showed the site as a built-up area; labeled "Radford High School". The encountered buried debris is assumed to be associated with the site's former use as a military reservation, which may have included a former military dumpsite.

The purpose of this investigation was to assess the presence and magnitude of the soil contamination within the track construction area and associated soil stockpiles.

On December 20, 2013, after the discovery of buried debris, Bureau Veritas responded onsite to collect one multi-increment soil sample and six suspect Asbestos Containing Material (ACM) samples. Two types of suspect ACM, an off-white fibrous material with debris and an off-white/brown fibrous material with debris, were observed. Three samples of each type of suspect ACM were collected and sent to NVL Laboratories, Inc., a National Voluntary Laboratory Accreditation Program (NVLAP) laboratory located in Seattle, Washington. The samples were analyzed for asbestos content utilizing Polarized Light Microscopy (PLM) analysis. The three samples of the first type of suspect ACM (off-white fibrous material with debris) tested positive for asbestos with 51% to 55% Chrysotile. The three samples of the second type of suspect ACM (off-white/brown fibrous material with debris) did not test positive for asbestos. After the samples were collected, MEI personnel covered the buried debris with geofabric. The asbestos was subsequently bagged and stored in a locked storage area. On February 11, 2014, Unitek arrived onsite and double bagged five bags of ACM, which were subsequently properly disposed.

The multi-increment soil sample was a representative sample collected from one decision unit (RHS-01), that was established on the northeastern portion of the site, where buried debris was uncovered. The sample was collected to assess the soil in the track area surrounding the buried debris. The soil sample was analyzed for Total Petroleum Hydrocarbons as Diesel Range Organics (TPH-DRO), Total Petroleum Hydrocarbons as Residual Range Organics (TPH-RRO), Semi-Volatile Organic Compounds (SVOCs), Resource Conservation and Recovery Act (RCRA) 8 Metals, polychlorinated biphenyls (PCBs), Organochlorine Pesticides, and dioxin. Analysis of the soil sample indicated that the soil concentrations of arsenic, cadmium, lead and dioxin exceeded their respective Hawaii Department of Health (HDOH) Tier 1 Environmental Action Levels (EALs). Further sampling and analysis were recommended to delineate the extent of the soil contamination.

A scope of work was prepared, submitted, and approved by the State of Hawaii Department of Health (HDOH) prior to conducting a follow-up investigation. On February 4 and 5, 2014, a follow-up soil investigation was conducted by Bureau Veritas. To facilitate the additional investigation, the site was divided into the following three areas of concern: (1) the excavated track area, (2) the soil stockpiles, and (3) the grassy/original field area. Each of the areas of concern was further divided into DUs based on visual contamination and size. A total of 29 DUs (RHS-DU-1 through RHS-DU-29) were established across the site to facilitate the collection of multi-increment soil samples from the surface soil layer in each DU.

One multi-increment surface soil sample was collected from each DU for a total of 29 samples. Three sets of replicate samples were also collected from three DUs selected to represent each of the three areas of concern. The samples were submitted to Environmental Services Network Pacific (ESN) Analytical Laboratory located in Honolulu, Hawaii for analytical testing and were analyzed for the following:

- TPH-DRO using Environmental Protection Agency (EPA) Method 8015B.
- TPH-RRO using EPA Method 8015B
- SVOCs using EPA Method 8270C
- RCRA 8 Metals using EPA Methods 6010B and 7471
- PCBs using EPA Method 8082
- Organochlorine Pesticides using EPA Method 8081A
- Dioxin using EPA Method 8290

TPH-DRO and TPH-RRO were not detected in the 29 soil samples at concentrations greater than the laboratory reporting limits.

One SVOC analyte, benzo(a)pyrene, was detected at concentrations that equaled or exceeded the HDOH Tier 1 EAL. In three of the 29 samples, benzo(a)pyrene concentrations that ranged between 0.15 and 0.43 milligrams per kilogram (mg/kg) were equal to or exceeded the HDOH Tier 1 EAL for benzo(a)pyrene of 0.15 mg/kg.

Five of the eight RCRA metals, arsenic, barium, cadmium, lead, and mercury, were detected at concentrations that exceeded their respective HDOH Tier 1 EALs. Arsenic was detected in seven of the 29 samples at concentrations ranging from 24 to 35 mg/kg, which were equal to or exceeded the HDOH Tier 1 EAL for arsenic of 24 mg/kg. Barium was detected in one of the samples at a concentration of 1,200 mg/kg, which exceeded the HDOH Tier 1 EAL for barium of 1,000 mg/kg. Cadmium was detected in one of the samples at a concentration of 14 mg/kg, which was equal to the HDOH Tier 1 EAL for cadmium of 14 mg/kg. Lead was detected in 15 of the samples at concentrations ranging from 240 to 6,200 mg/kg, which exceeded the HDOH Tier 1 EAL for lead of 200 mg/kg. Mercury was detected in 22 of the samples at concentrations ranging from 4.8 to 200 mg/kg, which exceeded the HDOH Tier 1 EAL for mercury of 4.7 mg/kg.

Organochlorine pesticides were not detected in the 29 samples at concentrations greater than the laboratory reporting limits.

One PCB, Aroclor 1260, was detected in five of the 29 samples at concentrations that exceeded the HDOH Tier 1 EAL. The concentrations of the PCB Aroclor 1260 ranged from 1.19 to 3.27 mg/kg, which exceeded the HDOH Tier 1 EAL for PCBs of 1.1 mg/kg.

Dioxin was detected in six of the 29 soil samples with Toxicity Equivalent (TEQ) concentrations above the HDOH Tier 1 EAL of 240 nanograms per kilogram (ng/kg) ranging from 290 ng/kg to 710 ng/kg. The concentrations in these six soil samples, RHS-DU-1, RHS-DU-2, RHS-DU-9, RHS-DU-13, RHS-DU-18, and RHS-DU-19, indicated soils within those DUs are categorized as HDOH Soil Management Category C. According to HDOH guidance (2012), Soil Management Category C soils should be restricted to commercial/industrial land use with a formal restriction to the deed against sensitive land uses (e.g., residential, schools, etc.) in the absence of significant institutional and engineered control and HDOH approval. In addition, an Environmental Hazard Management Plan (EHMP) is required if soil is left on site for long-term management.

It should be noted that a replicate sample collected from one DU (RHS-DU-1) contained a Dioxin TEQ concentration of 2,900 ng/kg indicating soil from that DU may fall into the HDOH Soil Management Category D. HDOH guidance (2012) indicates that Soil Management Category D soils require remedial action under any land use scenario in order to reduce potential exposure and adverse health risks.

A preliminary Environmental Hazard Evaluation (EHE) was prepared for the field area of the site because of the potential for exposures to student athletes competing on the grassy/original field area. Based on the analytical laboratory results of the multi-increment surface soil samples collected from the four field area DUs, one contaminant, mercury, was detected in one of the four DUs, RHS-DU-29, at a concentration exceeding the HDOH Tier 1 EALs. The surface soil sample collected from RHS-DU-29 contained a mercury concentration of 5.1 mg/kg, which exceeded the HDOH Tier 1 EAL for mercury of 4.7 mg/kg. The surface soil samples from the remaining three field area DUs did not contain COPC concentrations exceeding the HDOH Tier 1 EALs.

The HDOH Tier 1 EAL for mercury is the direct contact EAL for residential sites, which is conservatively based on a noncarcinogen Hazard Quotient (HQ) of 0.2 to be protective of cumulative health risks potentially posed by sites with multiple noncarcinogens (up to a total of five). However, soil in RHS-DU-29 contained only one noncarcinogen at a concentration exceeding its HDOH Tier 1 EAL. As such, the direct contact EAL calculated using a HQ of 1.0 of 23 mg/kg may be used (see Table I-1 of the Technical Guidance Manual [TGM], HDOH, 2012). The mercury concentration of 5.1 mg/kg measured in RHS-DU-29 does not exceed the direct contact HDOH EAL for residential sites for mercury calculated using a HQ of 1.0 of 23 mg/kg. In other words, mercury surface soil concentrations measured in RHS-DU-29 are not expected to pose a risk for noncancer health effects assuming the strictest exposure parameters (i.e., residential).

Based on the laboratory analytical results, Bureau Veritas recommends the following:

- The stockpile DUs (RHS-DU-14 through RHD-DU-25) should be profiled and properly disposed.
- Conduct an additional site characterization investigation to further delineate the horizontal extent of contamination and the vertical extent of contamination.
- After the additional site characterization is conducted, an EHE should be prepared to assess the potential environmental hazards posed by the soil contamination.
- Develop remedial alternatives based on the results of the EHE.

1.0 INTRODUCTION AND PURPOSE

The State of Hawaii Department of Education (DOE) retained Bureau Veritas North America, Inc. (Bureau Veritas) to collect and analyze soil samples and suspect asbestos materials from the track and field area of Radford High School. This report summarizes the data collected at the property described as being located at 4361 Salt Lake Boulevard, Tax Map Key (TMK) Number (1) 9-9-002: Parcel 023 (hereinafter referred to as the "site"). A site location map is presented as Figure 1, located behind the Figures tab.

On December 19, 2013 buried debris was encountered during excavation activities of the track and field area of the site. A topographic map from 1953 depicts the site and adjoining areas as a naval reservation located within Makalapa Crater. The topographic maps from 1959 through 2013 showed the site as a built-up area; labeled "Radford High School". The encountered buried debris is assumed to be associated with the site's former use as a military reservation, which may have included a former military dumpsite.

The purpose of this investigation was to assess the presence and magnitude of the soil contamination within the track construction area and associated soil stockpiles.

2.0 BACKGROUND

2.1 SITE DESCRIPTION

The site is located on the northwestern corner of a portion of TMK Number: (1) 9-9-002: Parcel 023 in a residential area of Honolulu, Hawaii. The site consists of approximately 25 acres of land located approximately one mile from Pearl Harbor. The site was developed as Radford High School by the State of Hawaii in 1957. The initial sampling area is presented as Figure 2.

2.1.1 Soil Conditions

The U.S. Department of Agriculture Soil Conservation Service (Foote, et al., 1972) classifies the soil within the area of the site as Makalapa clay, 2 to 6 percent slopes. This series consists of well-drained soils on uplands on the island of Oahu, near Salt Lake Crater, Diamond Head, and the Mokapu Peninsula. These soils formed in volcanic tuff. They are gently sloping to moderately steep. Elevations range from 20 to 200 feet. The annual rainfall amounts to 20 to 35 inches.

2.1.2 Groundwater Conditions

Bureau Veritas reviewed the Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii (Mink, J.F. and L.S. Lau, 1990), published by the Water Resources Research Center at the University of Hawaii, for information on groundwater conditions below the subject property. The report describes the upper and lower aquifers below the site as part of the Waimalu aquifer system of the Pearl Harbor sector, on the island of Oahu.

The upper aquifer is an unconfined basal aquifer of the sedimentary type, occurring in non-volcanic lithology. Its status is described as an irreplaceable, low (250-1,000 milligrams per liter [mg/L] Chloride) water supply. It is considered a currently used ecologically important water source, and has a high vulnerability to contamination.

The lower aquifer is a confined basal aquifer of the dike type, occurring in dike compartments. Its status is described as an irreplaceable, low (250-1,000 mg/L Chloride) water supply, considered a currently used ecologically important water source, and has a moderate vulnerability to contamination.

The site is located above the State of Hawaii Department of Health (HDOH) defined Underground Injection Control (UIC) line. Areas above the UIC line denote potential underground drinking water aquifers. Areas below the UIC line generally denote aquifers that are unsuitable for drinking water purposes. Consequently, the aquifers above the site are considered drinking water aquifers.

The subsurface conditions under the site are interpreted from available data and may vary. Estimated groundwater flow direction is based on topography and nearby water features unless otherwise noted. Topography is not always a reliable basis for predicting groundwater flow direction. The local groundwater gradient under the site may be influenced naturally by tidal influences, zones of higher or lower permeability, or artificially by nearby pumping or recharge, and may deviate from the regional trend.

2.2 HISTORICAL SITE USE

On December 19, 2013 buried debris was encountered during excavation activities of the track and field area of the site. A topographic map from 1953 depicts the site and adjoining areas as a naval reservation located within Makalapa Crater. The topographic maps from 1959 through 2013 showed the site as a built-up area labeled “Radford High School”. The encountered buried debris is assumed to be associated with the site’s former use as a military reservation, which may have included a former military dumpsite.

2.3 RECENT CONSTRUCTION ACTIVITIES

Buried debris was encountered during recent construction activities involving refurbishing of the track and field area. The track and the end zone areas have been excavated, as well as the long-jump area and drain line within the field. In addition, the soil stockpiles are present onsite associated with the construction activities.

3.0 APPLICABLE ACTION LEVELS

The applicable action levels for this site were established using the HDOH guidance document entitled "Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater" (HDOH, 2012), which is published by the HDOH Hazard Evaluation and Emergency Response (HEER) Office.

The site is located above the HDOH defined UIC line. Consequently, the aquifers below the site are considered drinking water aquifers. Furthermore, the site lies greater than 150 meters from a surface water body. Therefore, the analytical results were compared to the HDOH Tier 1 Environmental Action Levels (EALs) where groundwater is a current or potential source of drinking water and the nearest surface water body is greater than 150 meters from the site (HDOH, 2012; Table A).

4.0 FIELD ACTIVITIES

4.1 INITIAL RESPONSE

On December 20, 2013, Bureau Veritas responded onsite to collect one soil sample and six suspect asbestos containing material (ACM) samples at the site because buried debris had been found by MEI Corporation while excavating the northeastern portion of Radford High Schools track and field.

Asbestos

Two types of suspect ACM, an off-white fibrous material with debris and an off-white/brown fibrous material with debris, were observed. Three samples of each type of suspect ACM were collected and sent to NVL Laboratories, Inc., a National Voluntary Laboratory Accreditation Program (NVLAP) laboratory located in Seattle, Washington. The samples were analyzed for asbestos content utilizing Polarized Light Microscopy (PLM) analysis. The three samples of the first type of suspect ACM (off-white fibrous material with debris) tested positive for asbestos with 51% to 55% Chrysotile. The three samples of the second type of suspect ACM (off-white/brown fibrous material with debris) did not test positive for asbestos. In summary, based on the laboratory results, one buried material (off-white fibrous material with debris) was confirmed as ACM (containing greater than [>] 1% asbestos).

The two types of suspect ACM are presented in the table below. Laboratory results for the suspect ACM samples collected during Bureau Veritas' site visit are presented in Appendix B.

Summary of Suspect ACM Sample Collection Information

Material Description	Material Location	Concentration
Off-white fibrous material with debris (3 Samples)	Northeastern corner of track and field area.	51% to 55% Chrysotile
Off-white/brown fibrous material with debris (3 Samples)	Northeastern corner of track and field area.	None Detected

After the samples were collected, MEI personnel covered the buried debris with geofabric. The asbestos was subsequently bagged and stored in a locked storage area. On February 11, 2014, Unitek arrived onsite and double bagged five bags of ACM, which were subsequently properly disposed. The waste disposal manifest is presented in Appendix D.

Soil

Also on December 20, 2013, Bureau Veritas collected one multi-increment soil sample, comprised of 30 sub-samples during potholing activities along the northeastern corner of the track and field area. The multi-increment soil sample was a representative sample collected from one decision unit (DU), RHS-01, that was established on the northeastern portion of the site, where buried debris was uncovered. The boundary of RHS-01 is shown on Figure 2, located behind the *Figures* tab. The sample was collected to assess the soil in the surrounding track area. The soil sample was analyzed for the following Chemicals of Potential Concern (COPC): Total Petroleum Hydrocarbons as Diesel Range Organics (TPH-DRO), TPH as Residual Range Organics (TPH-RRO), Semi-Volatile Organic Compounds (SVOCs), Resource Conservation and Recovery Act (RCRA) 8 Metals, polychlorinated biphenyls (PCBs), Organochlorine Pesticides, and dioxins.

Analysis of the soil sample reported that the concentrations of arsenic, cadmium, lead and dioxin exceeded their respective HDOH Tier 1 EALs. Further sampling and analysis were recommended to assess the extent of the soil contamination within the track construction area.

4.2 INVESTIGATION PLANNING

Following HDOH guidance (HDOH, 2013), a multi-increment soil sampling approach was selected for this site investigation. The HDOH defines a DU as a portion of a site where a decision is to be made regarding the extent and magnitude of contaminants identified within the unit, as well as the potential environmental hazards posed by the contaminants. A scope of work was prepared, submitted, and approved by HDOH prior to conducting a follow-up investigation.

To facilitate the additional investigation, the site was divided into the following three main areas of concern: (1) the excavated track area, (2) the soil stockpiles, and (3) the grassy/original field area. Each of the areas of concern was further divided into DUs based on visual contamination and size. A total of 29 DUs (RHS-DU-1 through RHS-DU-29) were established across the site to facilitate the collection of multi-increment soil samples from the surface soil layers in each DU. The boundaries of each DU are shown on Figure 3, located behind the *Figures* tab.

4.3 SOIL SAMPLING ACTIVITIES

On February 4 and 5, 2014, Bureau Veritas collected multi-increment surface soil samples from the 29 DUs established at the site. Soil samples were collected using a soil sampling probe that was advanced approximately six inches into the soil. Each increment consisted of approximately one to two ounces of soil. A total of 50 increments were collected using a systematic random approach across each DU. The increments were placed in a new, plastic Ziploc™ plastic bag. The soil coring device was decontaminated using Alconox™ cleaner and double rinsed with distilled water prior to collecting the sample.

The sample container was labeled and placed into a cooler with wet-ice to begin the preservation process during delivery to the laboratory. The sample was logged on a chain-of-custody form, which accompanied the sample to the laboratory. Three sets of replicate soil samples were also collected, one set from each area of concern, and analyzed (see Section 4.4).

A summary of the primary soil samples is presented in the following table:

Summary of Primary Soil Samples

Sample ID	DU	Date/Time Sample Collected	Sample Interval (bgs)	Description of Sample Location
RHS-DU-1	DU1	2-4-14/1525	0 to 0.5 feet	Eastern portion of the track
RHS-DU-2	DU2	2-4-14/1500	0 to 0.5 feet	Eastern portion of the track
RHS-DU-3	DU3	2-4-14/1403	0 to 0.5 feet	Eastern portion of the track
RHS-DU-4	DU4	2-4-14/1145	0 to 0.5 feet	Southern portion of the track
RHS-DU-5	DU5	2-4-14/1220	0 to 0.5 feet	Southern portion of the track
RHS-DU-6	DU6	2-4-14/1402	0 to 0.5 feet	Southern portion of the track
RHS-DU-7	DU7	2-4-14/1131	0 to 0.5 feet	Southern portion of the track
RHS-DU-8	DU8	2-4-14/1424	0 to 0.5 feet	Western portion of the track
RHS-DU-9	DU9	2-4-14/1455	0 to 0.5 feet	Western portion of the track
RHS-DU-10	DU10	2-5-14/0915	0 to 0.5 feet	Northern portion of the track
RHS-DU-11	DU11	2-5-14/0900	0 to 0.5 feet	Northern portion of the track

Sample ID	DU	Date/Time Sample Collected	Sample Interval (bgs)	Description of Sample Location
RHS-DU-12	DU12	2-5-14/0945	0 to 0.5 feet	Northern portion of the track
RHS-DU-13	DU13	2-5-14/0945	0 to 0.5 feet	Northern portion of the track
RHS-DU-14	DU14	2-4-14/1252	0 to 0.5 feet	Northern soil stockpile
RHS-DU-15	DU15	2-4-14/1345	0 to 0.5 feet	Northern soil stockpile
RHS-DU-16	DU16	2-4-14/1411	0 to 0.5 feet	Northern soil stockpile
RHS-DU-17	DU17	2-4-14/1436	0 to 0.5 feet	North of end zone soil stockpile
RHS-DU-18	DU18	2-4-14/1300	0 to 0.5 feet	North of end zone soil stockpile
RHS-DU-19	DU19	2-4-14/1422	0 to 0.5 feet	North of end zone soil stockpile
RHS-DU-20	DU20	2-4-14/1146	0 to 0.5 feet	End zone soil stockpile
RHS-DU-21	DU21	2-4-14/1226	0 to 0.5 feet	End zone soil stockpile
RHS-DU-22	DU22	2-4-14/1015	0 to 0.5 feet	Western soil stockpile
RHS-DU-23	DU23	2-4-14/1023	0 to 0.5 feet	Western soil stockpile
RHS-DU-24	DU24	2-4-14/1050	0 to 0.5 feet	Southern soil stockpile
RHS-DU-25	DU25	2-4-14/1115	0 to 0.5 feet	Southern soil stockpile
RHS-DU-26	DU26	2-4-14/1020	0 to 0.5 feet	Northern portion of the field
RHS-DU-27	DU27	2-4-14/1000	0 to 0.5 feet	Eastern portion of the field
RHS-DU-28	DU28	2-4-14/1007	0 to 0.5 feet	Western portion of the field
RHS-DU-29	DU29	2-4-14/0945	0 to 0.5 feet	Southern portion of the field

4.4 FIELD REPLICATE SAMPLING

Field Quality Assurance/Quality Control (QA/QC) was performed through the collection of three sets of replicate samples, each consisting of the primary sample and an associated duplicate sample and triplicate sample. The replicate samples were collected from the upper six inches of DU1, DU17 and DU26. A summary of the primary/replicate soil samples is presented in the following table:

Summary of Primary/Replicate Soil Samples

Sample ID	Sample Type	DU	Date/Time Sample Collected	Sample Interval (bgs)	Description of Sample Location
RHS-DU-1	primary	DU1	2-4-14/1525	0 to 0.5 feet	Eastern portion of the track
RHS-DU-1.2	duplicate	DU1	2-5-14/0933	0 to 0.5 feet	Eastern portion of the track
RHS-DU-1.3	triplicate	DU1	2-5-14/1030	0 to 0.5 feet	Eastern portion of the track
RHS-DU-17	primary	DU17	2-4-14/1436	0 to 0.5 feet	North of end zone soil stockpile
RHS-DU-17.2	duplicate	DU17	2-4-14/1449	0 to 0.5 feet	North of end zone soil stockpile
RHS-DU-17.3	triplicate	DU17	2-4-14/1502	0 to 0.5 feet	North of end zone soil stockpile
RHS-DU-26	primary	DU26	2-4-14/1020	0 to 0.5 feet	Northern portion of the field
RHS-DU-26.2	duplicate	DU26	2-4-14/1059	0 to 0.5 feet	Northern portion of the field
RHS-DU-26.3	triplicate	DU26	2-4-14/1145	0 to 0.5 feet	Northern portion of the field

Soil analytical results for the primary and replicate samples are summarized in Table 4, located behind the *Tables* tab.

The data from the replicate samples were used to calculate important statistical measures, including Relative Percent Difference (RPD) and Relative Standard Deviation (RSD). A detailed description of the calculations performed using data from the replicate samples is presented in Section 5.4.

4.5 CHAIN-OF-CUSTODY

Each soil sample was logged on a chain-of-custody form upon collection. The chain-of-custody forms accompanied the samples from the field to the laboratory. Whenever the samples changed hands, the custodian of the samples signed the "relinquished by" section and the receiving person signed the "received by" section. The soil samples were delivered by hand under standard chain-of-custody procedures to TestAmerica and Environmental Services Network (ESN) Pacific Inc.

4.6 DECONTAMINATION PROCEDURES

New disposable gloves were worn by the sampler during the soil sample collection activities. The gloves were disposed of following the collection of a soil sample and new gloves were donned prior to the collection of the following soil sample. Equipment, such as the soil sampling probes and trowels, were decontaminated between sample collections as follows:

- Washed with Alconox™
- Double rinsed with distilled water
- Air dried

4.7 INVESTIGATION DERIVED WASTE

The field activities generated different types of investigation derived waste (IDW), including used personal protective equipment (PPE) and disposable equipment (i.e. nitrile gloves, paper towels, etc.).

Used PPE and disposable equipment was sealed in a plastic bag and placed in a municipal refuse dumpster. The used PPE and equipment were not considered hazardous and were sent to a municipal landfill.

5.0 LABORATORY ANALYTICAL RESULTS

The soil samples collected as part of the initial response/investigation were submitted to TestAmerica located in Aiea, Hawaii. The samples collected during the follow-up investigation were submitted to ESN Analytical Laboratories located in Honolulu, Hawaii for analytical testing. The soil samples were submitted to the lab in a cooler containing wet ice. Copies of the Analytical Reports and Chain-of-Custody documents are presented in Appendices A through C. Tables 1 through 5, located behind the *Tables* tab, present the laboratory analytical results for the samples.

The following analyses were performed on the soil samples collected from the site:

- TPH-DRO using Environmental Protection Agency (EPA) Method 8015B.
- TPH-RRO using EPA Method 8015B
- SVOCs using EPA Method 8270C
- RCRA 8 Metals using EPA Methods 6010B and 7471

- PCBs using EPA Method 8082
- Organochlorine Pesticides using EPA Method 8081A
- Dioxin using EPA Method 8290

5.1 INITIAL INVESTIGATION SOIL ANALYTICAL RESULTS

During the initial investigation, one multi-incremental soil sample was collected from one DU (RHS-01). Table 1 summarizes the analytical results of the soil sample and compares the results to the HDOH Tier 1 EALs. The soil sample was obtained from 0 to 0.5 feet below ground surface (bgs).

5.1.1 TPH

TPH-DRO was detected at a concentration of 24 milligrams per kilogram (mg/kg), which was below the HDOH Tier 1 EAL for TPH-DRO of 100 mg/kg. TPH-RRO was detected at a concentration of 23 mg/kg, which was below the HDOH Tier 1 EAL for TPH-RRO of 500 mg/kg.

5.1.2 SVOCs

Four SVOC analytes, 2-methylnaphthalene, benzo[b]fluoranthene, indeno[1,2,3-cd]pyrene, and naphthalene, were detected, but at concentrations less than their respective HDOH Tier 1 EALs. The remaining SVOC analytes were not detected at concentrations greater than the laboratory reporting limits.

5.1.3 RCRA 8 Metals

Three of the eight RCRA metals, arsenic, cadmium, and lead, were detected at concentrations greater than their respective HDOH Tier 1 EALs. Arsenic was detected at a concentration of 43 mg/kg, which was above the HDOH Tier 1 EAL for arsenic of 24 mg/kg. Cadmium was detected at a concentration of 26 mg/kg, which was above the HDOH Tier 1 EAL for cadmium of 14 mg/kg. Lead was detected at a concentration of 5,300 mg/kg, which was above the HDOH Tier 1 EAL for lead of 200 mg/kg.

Four of the eight RCRA metals, barium, chromium, silver, and mercury, were detected, but at concentrations below their respective HDOH Tier 1 EALs. Barium was detected at a concentration of 940 mg/kg, which was below the HDOH Tier 1 EAL for barium of 1,000 mg/kg. Chromium was detected at a concentration of 210 mg/kg, which was below the HDOH Tier 1 EAL for chromium of 1,100 mg/kg. Silver was detected at a concentration of 14 mg/kg, which was below the HDOH Tier 1 EAL for silver of 78 mg/kg. Mercury was detected at a concentration of 1.1 mg/kg, which was below the HDOH Tier 1 EAL for mercury of 4.7 mg/kg.

Selenium was not detected at a concentration greater than the laboratory reporting limit.

5.1.4 PCBs

The PCB Aroclor 1260 was detected at a concentration of 0.094 mg/kg, which was below the HDOH Tier 1 EAL for PCBs of 1.1 mg/kg.

5.1.5 Organochlorine Pesticides

Five organochlorine pesticide analytes, DDE, DDT, dieldrin, endrin, and endrin aldehyde, were detected, but at concentrations less than their respective HDOH Tier 1 EALs. The remaining organochlorine pesticide analytes were not detected at concentrations greater than the laboratory reporting limits.

5.1.6 Dioxin

The term dioxin is used to refer to a family of chlorinated compounds with similar chemical structures and mechanisms of toxicity, referred to as "congeners." Because the various dioxins/furans congeners are not equally toxic, concentrations are reported relative to 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (2, 3, 7, 8-TCDD) referred to as the Dioxin Toxicity Equivalent (TEQ) concentration.

For the calculations of the Dioxin TEQ concentrations, the 2005 World Health Organization (WHO) toxicity equivalence factors (TEFs) were used (Van den Berg, et. al, 2006). The Dioxin TEQ calculations are presented in Table 2, located behind the *Tables* tab.

The HDOH published the document titled "Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater," dated Fall 2011 (HDOH, 2012). The technical memorandum indicates that the Tier 1EAL for Dioxin TEQ is 240 ng/kg.

The HDOH document also provides a Summary of TEQ Dioxin Soil Action Levels and associated management categories. An abbreviated version of the Summary is shown in the Table below.

Summary of TEQ Dioxin Soil Action Levels and Associated Management Categories

Soil Management Category	TEQ	Recommended Action
A	Less than 20 ng/kg	**Background.** Within range of expected background conditions in non-agricultural and non-industrial areas. No further action required and no restrictions on land use.
B	Between 20 ng/kg and 240 ng/kg	**Minimally Impacted.** Exceeds expected background conditions but within range anticipated for agricultural fields. Potential health risks considered insignificant. Include Category B soil in remedial actions for more heavily contaminated spill areas as practicable in order to reduce exposure (e.g., outer margins of pesticide mixing areas).
C	Between 240 ng/kg and 1,500 ng/kg	**Moderately impacted.** Typical of incinerator ash, burn pits, wood treatment operations that used pentachlorophenol, and the margins of heavily impacted, pesticide mixing areas associated with former sugarcane operations that used pentachlorophenol. Restriction to commercial/industrial land use required with a formal restriction to the deed against sensitive land uses (e.g., residential, schools, etc.) in the absence of significant institutional and engineered control and HDOH approval. Environmental Hazard Management Plan (EHMP) required if soil left on site for long-term management. This includes controls to ensure no off-site dispersion (e.g., dust or surface runoff) or inadvertent excavation and reuse at properties with sensitive land uses.
D	Greater than 1,500 ng/kg	**Heavily Impacted.** Typical of former pesticide mixing areas that used pentachlorophenol. Remedial actions required under any land use scenario in order to reduce potential exposure. Potentially adverse health risks under both sensitive and commercial/industrial land use scenarios in the absence of significant institutional and/or engineered controls.

Sample RHS-01 had a TEQ dioxin concentration of 2,019 ng/kg, which exceeded the HDOH Tier 1 EAL for both unrestricted use (240 ng/kg) and commercial/industrial use (1,500 ng/kg). Following HDOH guidance (2012), the calculated TEQ Dioxin soil concentration is within the HDOH TEQ Dioxin Soil Management Category D (Heavily Impacted). The Guidance indicates that remedial actions are required for Category D soils under any land use scenario in order to reduce potential exposure.

5.2 FOLLOW-UP INVESTIGATION SOIL ANALYTICAL RESULTS

A total of 29 primary, multi-increment, surface soil samples were collected (i.e., one soil sample from each DU) during the follow-up investigation. Replicate multi-increment, surface soil samples were also collected from three DUs (i.e., one DU representing each of the three areas of concern: the track, the field, and the soil stockpile areas). Samples were obtained from the upper 6-inches of soil. Table 3, summarizes the analytical results of the soil samples and compares the results to the HDOH Tier 1 EALs.

5.2.1 TPH

TPH-DRO and TPH-RRO were not detected in the 29 soil samples at concentrations greater than the laboratory reporting limits.

5.2.2 SVOCs

One SVOC analyte, benzo(a)pyrene, was detected at concentrations that equaled or exceeded the HDOH Tier 1 EAL. In three of the 29 samples, benzo(a)pyrene concentrations that ranged between 0.15 and 0.43 mg/kg were equal to or exceeded the HDOH Tier 1 EAL for benzo(a)pyrene of 0.15 mg/kg.

Seven SVOC analytes, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene, were detected in one or more of the 29 samples, but at concentrations below their respective HDOH Tier 1 EALs.

The remaining SVOCs analytes were not detected at concentrations greater than the laboratory reporting limits.

5.2.3 RCRA 8 Metals

Five of the eight RCRA metals, arsenic, barium, cadmium, lead, and mercury, were detected at concentrations that exceeded their respective HDOH Tier 1 EALs. Arsenic was detected in seven of the 29 samples at concentrations ranging from 24 to 35 mg/kg, which were equal to or exceeded the HDOH Tier 1 EAL for arsenic of 24 mg/kg. Barium was detected in one of the samples at a concentration of 1,200 mg/kg, which exceeded the HDOH Tier 1 EAL for barium of 1,000 mg/kg. Cadmium was detected in one of the samples at a concentration of 14 mg/kg, which was equal to the HDOH Tier 1 EAL for cadmium of 14 mg/kg. Lead was detected in 15 of the samples at concentrations ranging from 240 to 6,200 mg/kg, which exceeded the HDOH Tier 1 EAL for lead of 200 mg/kg. Mercury was detected in 22 of the samples at concentrations ranging from 4.8 to 200 mg/kg, which exceeded the HDOH Tier 1 EAL for mercury of 4.7 mg/kg.

Chromium was detected in all of the 29 samples, but at concentrations below the HDOH Tier 1 EAL for chromium of 1,100 mg/kg. Selenium and silver were not detected in the 29 samples at concentrations greater than the laboratory reporting limits.

5.2.4 PCBs

One PCB, Aroclor 1260, was detected in five of the 29 samples at concentrations that exceeded the HDOH Tier 1 EAL. The concentrations of the PCB Aroclor 1260 ranged from 1.19 to 3.27 mg/kg, which exceeded the HDOH Tier 1 EAL for PCBs of 1.1 mg/kg. The remaining PCB Aroclors were not detected at concentrations greater than the laboratory reporting limits.

5.2.5 Organochlorine Pesticides

Seven of the organochlorine pesticides analytes, alpha-chlordane, gamma-chlordane, chlordane (technical), dieldrin, endosulfan II, DDE, and DDT, were detected in one or more of the soil samples, but at concentrations less than their respective HDOH Tier 1 EALs. The remaining organochlorine pesticides were not detected at concentrations greater than the laboratory reporting limits.

5.2.6 Dioxin

The Dioxin TEQ calculations were performed by the analytical laboratory and are presented within the laboratory analytical reports (see Appendix C). The analytical laboratory calculated the Dioxin TEQs following three different approaches (i.e., a lower bound, a medium bound, and an upper bound). The medium bound approach used one-half the laboratory detection limit as a proxy concentration for the congeners that were not detected. The medium bound approach followed the approach recommended by the HDOH (HDOH, 2012). As such, the medium bound Dioxin TEQ concentrations were used for comparison to the HDOH action levels (see Table 3).

Dioxin was detected in 6 of the 29 soil samples with TEQ concentrations above the HDOH TEQ Dioxin SAL of 240 ng/kg ranging from 290 ng/kg to 710 ng/kg. Dioxin TEQ concentrations in the remaining 23 samples did not exceed the HDOH Tier EAL of 240 ng/kg. The concentrations in these six soil samples, RHS-DU-1, RHS-DU-2, RHS-DU-9, RHS-DU-13, RHS-DU-18, and RHS-DU-19, indicated soils within those DUs are categorized as HDOH Soil Management Category C. According to HDOH guidance (2012), Soil Management Category C soils should be restricted to commercial/industrial land use with a formal restriction to the deed against sensitive land uses (e.g., residential, schools, etc.) in the absence of significant institutional and engineered control and HDOH approval. In addition, an Environmental Hazard Management Plan (EHMP) is required if soil is left on site for long-term management.

It should be noted that a replicate sample collected from one DU (RHS-DU-1) contained a Dioxin TEQ concentration of 2,900 ng/kg indicating soil from that DU may fall into the HDOH Soil Management Category D. HDOH guidance (2012) indicates that Soil Management Category D soils require remedial action under any land use scenario in order to reduce potential exposure and adverse health risks.

Six of the samples, RHS-DU-20, RHS-DU-21, RHS-DU-23, RHS-DU-24, RHS-DU-25, and RHS-DU-28, had Dioxin TEQ concentrations less than 20 ng/kg, indicating those six DUs had Dioxin TEQ concentrations that are within the range of expected background conditions in non-agricultural and non-industrial areas (HDOH Soil Management Category A). No further actions are required and no restrictions on land use are necessary for HDOH Soil Management Category A soils.

The remaining 17 samples had Dioxin TEQ concentrations greater than 20 ng/kg, but less than 240 ng/kg indicating those 17 DUs had Dioxin TEQ concentrations that exceeded expected background conditions but are within the range anticipated for agricultural fields (HDOH Soil Management Category B): RHS-DU-3, RHS-DU-4, RHS-DU-5, RHS-DU-6, RHS-DU-7, RHS-DU-8, RHS-DU-10, RHS-DU-11, RHS-DU-12, RHS-DU-14, RHS-DU-15, RHS-DU-16, RHS-DU17, RHS-DU-22, RHS-DU-26, RHS-DU-27, and RHS-DU-29. Potential health risks are considered insignificant for HDOH Soil Management Category B soils.

5.3 LABORATORY QUALITY CONTROL

The soil sample collected during the initial investigation was submitted to TestAmerica Analytical Laboratory in Aiea, Oahu, Hawaii for laboratory analysis. The soil samples collected as part of the follow-up investigation were submitted to ESN Analytical Laboratory in Honolulu, Oahu, Hawaii for laboratory analysis. Analytical data were generated following EPA methods (SW-846 protocols), laboratory standard operating procedures (SOP), and QA/QC guidelines for sample analysis. Common laboratory QC checks include the use of Method Blank, Matrix Spike and Matrix Spike Duplicate, and Laboratory Control and Laboratory Control Duplicate samples.

Adequate reporting levels of the chemicals of concern are dependent on the sample matrix, naturally occurring background concentrations, and laboratory instrumentation. For some of the constituents, the laboratory reporting limits were greater than the HDOH Tier 1 EALs. As stated in the HDOH guidance document (HDOH, 2012), laboratory reporting limits of chemicals were not directly considered in development of the HDOH EALs, and therefore, some standards are not able to be achieved through standard laboratory analysis. In these cases, it is generally acceptable to consider the reporting limit in place of the screening level.

5.4 FIELD QUALITY CONTROL

Field QA/QC was performed through the collection of three sets of replicate samples consisting of the primary sample and an associated duplicate and triplicate sample. The table below lists sample identification numbers for the primary samples and the associated duplicate and triplicate samples.

Duplicate and Triplicate Sample Identification

Primary Sample Identification Number	Associated Duplicate (Dup) and Triplicate (Trip) Sample Identification Number
RHS-DU-1	RHS-DU-1.2 and RHS-DU-1.3
RHS-DU-17	RHS-DU-17.2 and RHS-DU-17.3
RHS-DU-26	RHS-DU-26.2 and RHS-DU-26.3

The statistical summaries were calculated for all chemical constituents with detected concentrations in the primary, duplicate, and triplicate samples and are presented in Table 5. For some analytes, the statistical calculations could not be performed because the analyte was not detected above laboratory reporting limits in one or more of the samples (i.e., primary, duplicate, or triplicate sample). In these cases, the RPD and RSD calculations were not performed.

Relative Percent Difference

The RPD, expressed as a percent, is a measure of precision between two sample values (the primary sample and the duplicate sample as well as the primary sample and the triplicate sample).

The RPD is calculated as the positive difference between two measurements (primary and duplicate; primary and triplicate) divided by the average of the two measured values and multiplied by 100. Typically, if the RPD is less than or equal to 35%, then the quality of the data is acceptable. The goal for this investigation was 35% or less.

Standard Deviation and Relative Standard Deviation

The standard deviation is a statistical measure of the scatter, or variability, of several sample values around their average. The lower the standard deviation, the lower the variability of the sample values observed in the data.

The RSD, expressed as a percent, is a measure of precision between several sample values (the primary, duplicate, and triplicate samples). The RSD differs from the RPD in that it measures the precision between several sample values versus just two sample values. The RSD is calculated as the standard deviation divided by the mean (average). The RSD is useful for comparing the uncertainty between different measurements. Typically, if the RSD is less than or equal to 35%, then the quality of the data is acceptable. The goal for this investigation was 35% or less.

RHS-DU-1
The RPDs and RSDs for the duplicate and triplicate samples of sample RHS-DU-1 exhibited moderate to significant variability. The calculated RPDs comparing the primary and the duplicate sample for dioxin, arsenic, barium, cadmium, chromium, and lead met the goal of less than 35%. The calculated RPD comparing the primary and duplicate sample for mercury was greater than 35%.

The calculated RPDs comparing the primary and the triplicate sample for arsenic, barium and chromium met the goal of less than 35%. The calculated RPDs comparing the primary and the triplicate sample for dioxin, cadmium, lead and mercury were greater than 35%.

The calculated RSDs for arsenic, barium, and chromium met the goal of less than 35%. The calculated RSDs for dioxin, cadmium, lead, and mercury were greater than 35%.

RHS-DU-17
The RPDs and RSDs for the duplicate and triplicate samples of sample RHS-DU-17 exhibited moderate to significant variability. The calculated RPDs comparing the primary and the duplicate sample for dioxin, arsenic, barium, cadmium, chromium, mercury, chrysene, fluoranthene, pyrene, Aroclor 1260 (PCB), and DDT met the goal of less than 35%. The calculated RPD comparing the primary and duplicate sample for lead was greater than 35%.

The calculated RPDs comparing the primary and the triplicate sample for dioxin, arsenic, barium, cadmium, chromium, mercury, Aroclor 1260 (PCB), and DDT met the goal of less than 35%. The calculated RPDs comparing the primary and the triplicate sample for lead, chrysene, fluoranthene, and pyrene were greater than 35%.

The calculated RSDs for dioxin, arsenic, barium, cadmium, chromium, lead, mercury, Aroclor 1260 (PCB), and DDT met the goal of less than 35%. The calculated RSDs for chrysene, fluoranthene, and pyrene were greater than 35%.

RHS-DU-26
The RPDs and RSDs for the duplicate and triplicate samples of sample RHS-DU-26 exhibited moderate to significant variability. The calculated RPDs comparing the primary and the duplicate sample for chromium and mercury met the goal of less than 35%. The calculated RPDs comparing the primary and duplicate sample for dioxin, barium, and lead were greater than 35%.

The calculated RPDs comparing the primary and the triplicate sample for barium, chromium, lead, and mercury met the goal of less than 35%. The calculated RPD comparing the primary and the triplicate sample for dioxin was greater than 35%.

The calculated RSDs for dioxin, arsenic, barium, chromium, lead, and mercury met the goal of less than 35%.

Summary
The RPDs and RSDs that exceeded the goal of 35% are likely the result of heterogeneous distribution of the contaminants in the soil column and to some degree variability in the sample collection process. Alternatives to reducing the variability may be applicable, such as reducing the area of each DU investigated. Overall, the data quality appears to be sufficient for decision making purposes.

5.5 PRELIMINARY ENVIRONMENTAL HAZARD EVALUATION - FIELD AREA

A preliminary Environmental Hazard Evaluation (EHE) was prepared for the field area of the site because of the potential for exposures to student athletes competing on the grassy/original field area. The field area was divided into four DUs (i.e., RHS-DU-26, RHS-DU-27, RHS-DU-28, and RHS-DU-29) as shown in Figure 3. Based on the analytical laboratory results of the multi-increment surface soil samples collected from the four field area DUs, one contaminant, mercury, was detected in one of the four DUs, RHS-DU-29, at a concentration exceeding the HDOH Tier 1 EALs. The surface soil sample collected from RHS-DU-29 contained a mercury concentration of 5.1 mg/kg, which exceeded the HDOH Tier 1 EAL for mercury of 4.7 mg/kg. The surface soil samples from the remaining three field area DUs did not contain COPC concentrations exceeding the HDOH Tier 1 EALs.

The HDOH Tier 1 EAL for mercury is the direct contact EAL for residential sites, which is conservatively based on a noncarcinogen Hazard Quotient (HQ) of 0.2 to be protective of cumulative health risks potentially posed by sites with multiple noncarcinogens (up to a total of five). However, soil in RHS-DU-29 contained only one noncarcinogen at a concentration exceeding its HDOH Tier 1 EAL. As such, the direct contact EAL calculated using a HQ of 1.0 of 23 mg/kg may be used (see Table I-1 of the Technical Guidance Manual [TGM], HDOH, 2012). The mercury concentration of 5.1 mg/kg measured in RHS-DU-29 does not exceed the direct contact HDOH EAL for residential sites for mercury calculated using a HQ of 1.0 of 23 mg/kg. In other words, mercury surface soil concentrations measured in RHS-DU-29 are not expected to pose a risk for noncancer health effects assuming the strictest exposure parameters (i.e., residential).

6.0 SUMMARY AND CONCLUSION

Buried debris was discovered during excavation activities of the track and field areas, which is assumed to be associated with the site's former use as a military reservation and possibly a military dumpsite. The purpose of this investigation was to assess the presence and magnitude of the soil contamination within the track construction area and associated soil stockpiles.

On December 20, 2013, after the discovery of buried debris, Bureau Veritas responded onsite to collect one multi-increment soil sample and six suspect ACM samples. Two types of suspect ACM, an off-white fibrous material with debris and an off-white/brown fibrous material with debris, were observed. Three samples of each type of suspect ACM were collected and sent to NVL Laboratories, Inc., a NVLAP laboratory located in Seattle, Washington. The samples were analyzed for asbestos content utilizing PLM analysis. The three samples of the first type of suspect ACM (off-white fibrous material with debris) tested positive for asbestos with 51% to 55% Chrysotile. The three samples of the second type of suspect ACM (off-white/brown fibrous material with debris) did not test positive for asbestos. After the samples were collected, MEI personnel covered the buried debris with geofabric. The asbestos was subsequently

bagged and stored in a locked storage area. On February 11, 2014, Unitek arrived onsite and double bagged five bags of ACM, which were subsequently properly disposed.

The multi-increment soil sample was a representative sample collected from one decision unit (RHS-01), that was established on the northeastern portion of the site, where buried material was uncovered. The sample was collected to assess the soil in the track area surrounding the buried debris. The soil sample was analyzed for TPH-DRO, THP-RRO, SVOCs, RCRA 8 Metals, PCBs, Organochlorine Pesticides, and dioxin. Analysis of the soil sample indicated that the soil concentrations of arsenic, cadmium, lead and dioxin exceeded their respective HDOH Tier 1 EALs. Further sampling and analysis was recommended to delineate the extent of the soil contamination.

A scope of work was prepared, submitted, and approved by HDOH prior to conducting a follow-up investigation. On February 4 and 5, 2014, a follow-up soil investigation was conducted by Bureau Veritas. To facilitate the additional investigation, the site was divided into the following three areas of concern: (1) the excavated track area, (2) the soil stockpiles, and (3) the grassy/original field area. Each of the areas of concern was further divided into DUs based on visual contamination and size. A total of 29 DUs (RHS-DU-1 through RHS-DU-29) were established across the site to facilitate the collection of multi-increment soil samples from the surface soil layer in each DU.

One multi-increment surface soil sample was collected from each DU for a total of 29 samples. Three sets of replicate samples were also collected from three DUs selected to represent each of the three areas of concern. The samples were submitted to ESN Analytical Laboratory located in Honolulu, Hawaii for analytical testing and were analyzed for the following:

- TPH-DRO using EPA Method 8015B.
- TPH-RRO using EPA Method 8015B
- SVOCs using EPA Method 8270C
- RCRA 8 Metals using EPA Methods 6010B and 7471
- PCBs using EPA Method 8082
- Organochlorine Pesticides using EPA Method 8081A
- Dioxin using EPA Method 8290

TPH-DRO and TPH-RRO were not detected in the 29 soil samples at concentrations greater than the laboratory reporting limits.

One SVOC analyte, benzo(a)pyrene, was detected at concentrations that equaled or exceeded the HDOH Tier 1 EAL. In three of the 29 samples, benzo(a)pyrene concentrations that ranged between 0.15 and 0.43 mg/kg were equal to or exceeded the HDOH Tier 1 EAL for benzo(a)pyrene of 0.15 mg/kg.

Five of the eight RCRA metals, arsenic, barium, cadmium, lead, and mercury, were detected at concentrations that exceeded their respective HDOH Tier 1 EALs. Arsenic was detected in seven of the 29 samples at concentrations ranging from 24 to 35 mg/kg, which were equal to or exceeded the HDOH Tier 1 EAL for arsenic of 24 mg/kg. Barium was detected in one of the samples at a concentration of 1,200 mg/kg, which exceeded the HDOH Tier 1 EAL for barium of 1,000 mg/kg. Cadmium was detected in one of the samples at a concentration of 14 mg/kg, which was equal to the HDOH Tier 1 EAL for cadmium of 14 mg/kg. Lead was detected in 15 of the samples at concentrations ranging from 240 to 6,200 mg/kg, which exceeded the HDOH Tier 1 EAL for lead of 200 mg/kg. Mercury was detected in 22 of the samples at concentrations ranging from 4.8 to 200 mg/kg, which exceeded the HDOH Tier 1 EAL for mercury of 4.7 mg/kg.

Organochlorine pesticides were not detected in the 29 samples at concentrations greater than the laboratory reporting limits.

One PCB, Aroclor 1260, was detected in five of the 29 samples at concentrations that exceeded the HDOH Tier 1 EAL. The concentrations of the PCB Aroclor 1260 ranged from 1.19 to 3.27 mg/kg, which exceeded the HDOH Tier 1 EAL for PCBs of 1.1 mg/kg.

Dioxin was detected in six of the 29 soil samples with TEQ concentrations above the HDOH Tier 1 EAL of 240 ng/kg ranging from 290 ng/kg to 710 ng/kg. The concentrations in these six soil samples, RHS-DU-1, RHS-DU-2, RHS-DU-9, RHS-DU-13, RHS-DU-18, and RHS-DU-19, indicated soils within those DUs are categorized as HDOH Soil Management Category C. According to HDOH guidance (2012), Soil Management Category C soils should be restricted to commercial/industrial land use with a formal restriction to the deed against sensitive land uses (e.g., residential, schools, etc.) in the absence of significant institutional and engineered control and HDOH approval. In addition, an Environmental Hazard Management Plan (EHMP) is required if soil is left on site for long-term management.

It should be noted that a replicate sample collected from one DU (RHS-DU-1) contained a Dioxin TEQ concentration of 2,900 ng/kg indicating soil from that DU may fall into the HDOH Soil Management Category D. HDOH guidance (2012) indicates that Soil Management Category D soils require remedial action under any land use scenario in order to reduce potential exposure and adverse health risks.

A preliminary Environmental Hazard Evaluation (EHE) was prepared for the field area of the site because of the potential for exposures to student athletes competing on the grassy/original field area. Based on the analytical laboratory results of the multi-increment surface soil samples collected from the four field area DUs, one contaminant, mercury, was detected in one of the four DUs, RHS-DU-29, at a concentration exceeding the HDOH Tier 1 EALs. The surface soil sample collected from RHS-DU-29 contained a mercury concentration of 5.1 mg/kg, which exceeded the HDOH Tier 1 EAL for mercury of 4.7 mg/kg. The surface soil samples from the remaining three field area DUs did not contain COPC concentrations exceeding the HDOH Tier 1 EALs.

The HDOH Tier 1 EAL for mercury is the direct contact EAL for residential sites, which is conservatively based on a noncarcinogen Hazard Quotient (HQ) of 0.2 to be protective of cumulative health risks potentially posed by sites with multiple noncarcinogens (up to a total of five). However, soil in RHS-DU-29 contained only one noncarcinogen at a concentration exceeding its HDOH Tier 1 EAL. As such, the direct contact EAL calculated using a HQ of 1.0 of 23 mg/kg may be used (see Table I-1 of the Technical Guidance Manual [TGM], HDOH, 2012). The mercury concentration of 5.1 mg/kg measured in RHS-DU-29 does not exceed the direct contact HDOH EAL for residential sites for mercury calculated using a HQ of 1.0 of 23 mg/kg. In other words, mercury surface soil concentrations measured in RHS-DU-29 are not expected to pose a risk for noncancer health effects assuming the strictest exposure parameters (i.e., residential).

Based on the laboratory analytical results, Bureau Veritas recommends the following:

- The stockpile DUs (RHS-DU-14 through RHD-DU-25) should be profiled and properly disposed.
- Conduct an additional site characterization investigation to further delineate the horizontal extent of contamination and the vertical extent of contamination.

- After the additional site characterization is conducted, an EHE should be prepared to assess the potential environmental hazards posed by the soil contamination.

- Develop remedial alternatives based on the results of the EHE.

7.0 LIMITATIONS

This report is for the exclusive use of the State of Hawaii Department of Education and no other party shall have any right to rely on any service provided by Bureau Veritas without prior written consent. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by Bureau Veritas in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made. Bureau Veritas will not distribute or publish this report without consent except as required by law or court order.

This report prepared by: _____

Ken Gomes
Staff Scientist
Environmental, Health, and Safety

This report prepared by: _____

Marietta Canty, M.S.
Senior Environmental Engineer
Health, Safety, and Environmental Services

This report reviewed by: _____

Daniel P. Ford, P.G.
Regional Vice President
Health, Safety, and Environmental Services

REFERENCES

REFERENCES

Foote, D.E. et al. 1972. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawaii Agricultural Experiment Station. Washington: GPO.

Hawaii State Department of Health (HDOH), 1984. Pearl Harbor Quadrangle, Hawaii. 7.5 Minute Series (Topographic) Map with Underground Injection Control Line Program Overlay. Prepared by the Underground Injection Control Line Program. July.

HDOH, 2012. Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Volumes I and II, prepared by the Hazard Evaluation & Emergency Response (HEER) Office. Fall 2011 (Updated January 2012).

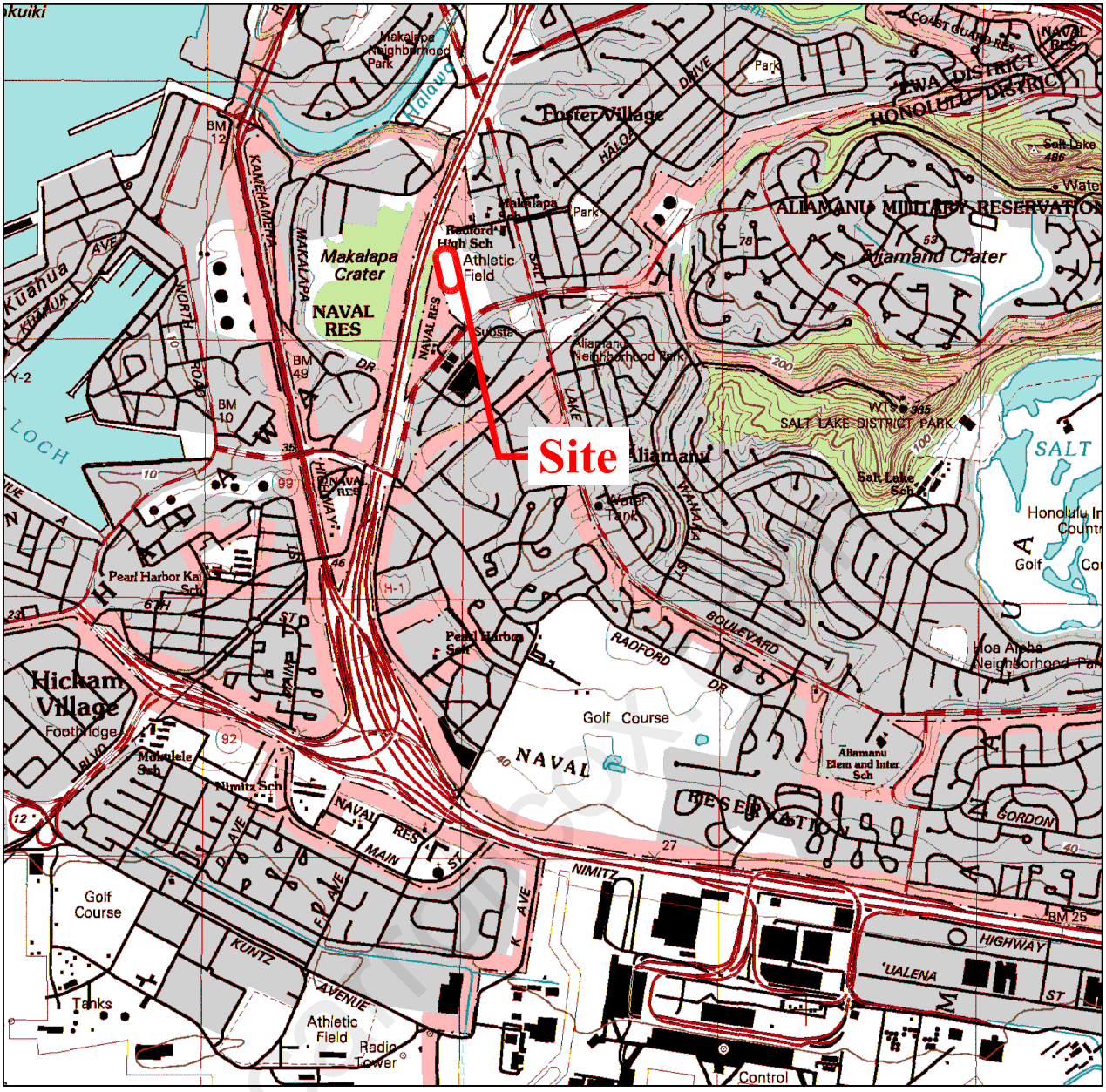
HDOH, 2013. *Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan.* Prepared by the Hazard Evaluation and Emergency Response Office. (Interim Final), March.

Mink J., and Lau, S., 1990. Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii (Technical Report No. 179). Water Resources Research Center at the University of Hawaii. February.

United States Department of the Interior Geological Survey (USGS). 2013. 7.5 Minute Topographic Map, Pearl Harbor, Hawaii Quadrangle with Hawaii Department of Land and Natural Resources

Van den Berg, M., Birnbaum, L.S., Denison, M., De Vito, M., Farland, W., Feeley, M., Fiedler, H., Hakansson, H., Hanberg, A., Haws, L., Rose, M., Safe, S., Schrenk, D., Tohyama, C., Tritscher, A., Tuomisto, J., Tysklind, M., Walker, N., Peterson, R.E.; 2006. Review: The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223-241.

FIGURES



SCALE 1: 24000

1 0 1 MILE

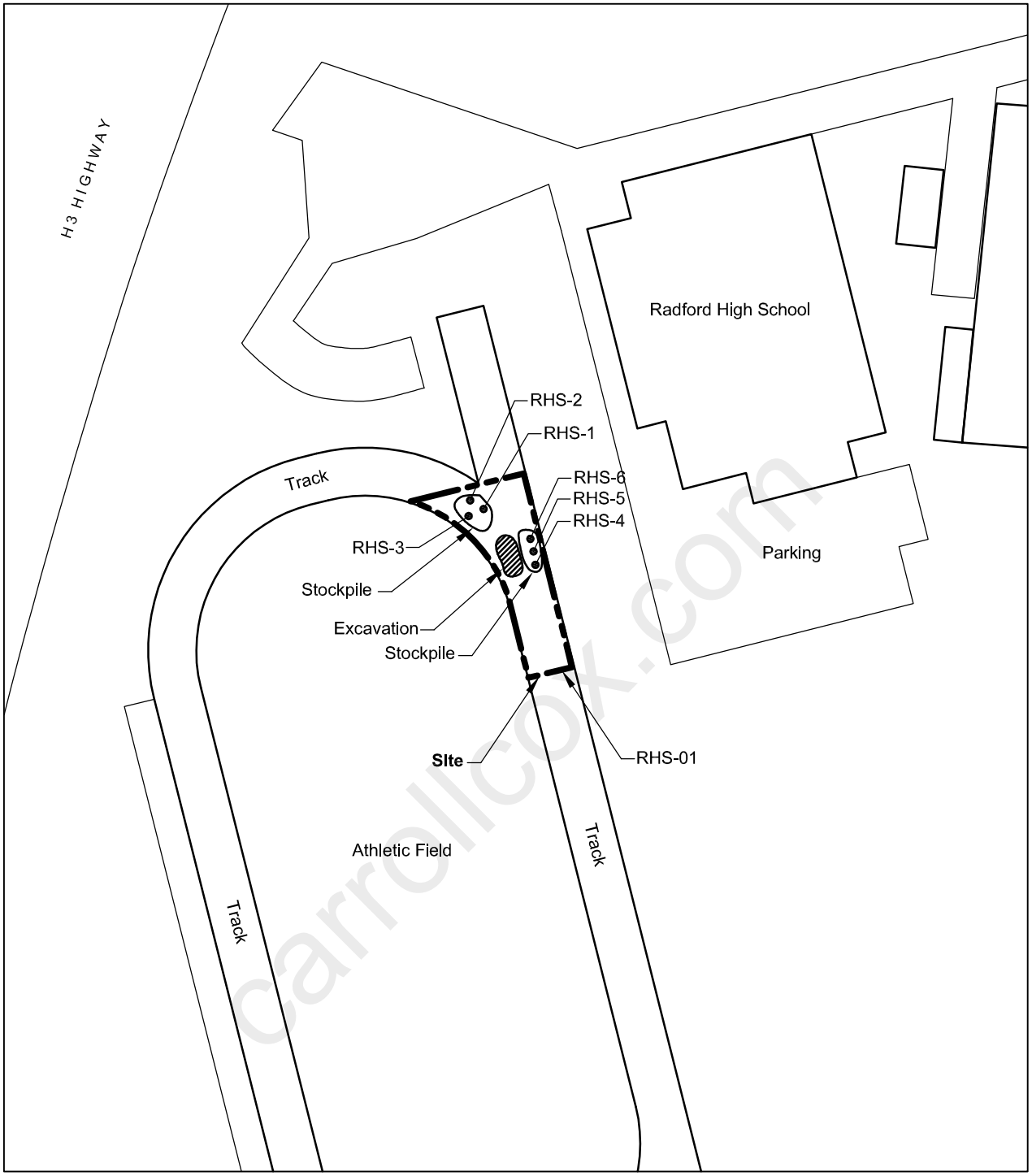
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

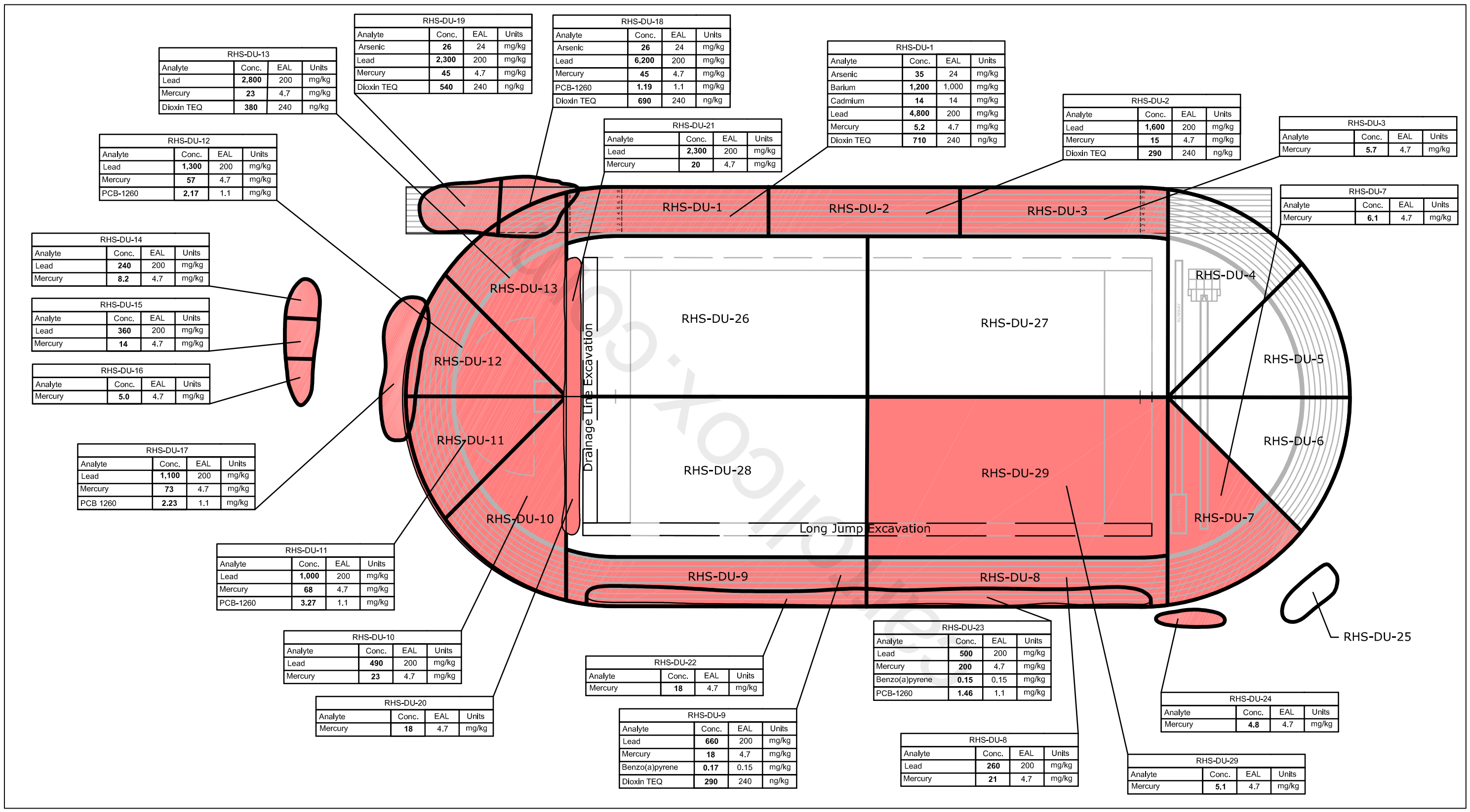
N

Portion of 7.5-minute Series (Topographic) Maps
United States Department of Interior
United States Geological Survey
Pearl Harbor Quadrangle, City & County of Honolulu, Hawaii
1998

BUREAU VERITAS	Project No.: 17012-012148.00	Title: Site Location Map
	Date: 3/20/14	Location: Radford High School 4361 Salt Lake Blvd. Honolulu, Oahu, Hawaii 96818
	Revised By: JC	FIGURE 1
	Checked By: KG	Client: State of Hawaii Department of Education



BUREAU VERITAS	Project No.: 17012-012148.00	Title: Initial Sample Area	FIGURE 2
	Date: 3/20/14	Location: Radford High School 4361 Salt Lake Blvd. Honolulu, Oahu, Hawaii 96818	
	Revised By: JC		
	Checked By: KG	Client: State of Hawaii Department of Education	



RHS-DU-19

Analyte	Conc.	EAL	Units
Arsenic	**26**	24	mg/kg
Lead	**2,300**	200	mg/kg
Mercury	**45**	4.7	mg/kg
Dioxin TEQ	**540**	240	ng/kg

RHS-DU-18

Analyte	Conc.	EAL	Units
Arsenic	**26**	24	mg/kg
Lead	**6,200**	200	mg/kg
Mercury	**45**	4.7	mg/kg
PCB-1260	**1.19**	1.1	mg/kg
Dioxin TEQ	**690**	240	ng/kg

RHS-DU-13

Analyte	Conc.	EAL	Units
Lead	**2,800**	200	mg/kg
Mercury	**23**	4.7	mg/kg
Dioxin TEQ	**380**	240	ng/kg

RHS-DU-21

Analyte	Conc.	EAL	Units
Lead	**2,300**	200	mg/kg
Mercury	**20**	4.7	mg/kg

RHS-DU-1

Analyte	Conc.	EAL	Units
Arsenic	**35**	24	mg/kg
Barium	**1,200**	1,000	mg/kg
Cadmium	**14**	14	mg/kg
Lead	**4,800**	200	mg/kg
Mercury	**5.2**	4.7	mg/kg
Dioxin TEQ	**710**	240	ng/kg

RHS-DU-2

Analyte	Conc.	EAL	Units
Lead	**1,600**	200	mg/kg
Mercury	**15**	4.7	mg/kg
Dioxin TEQ	**290**	240	ng/kg

RHS-DU-3

Analyte	Conc.	EAL	Units
Mercury	**5.7**	4.7	mg/kg

RHS-DU-12

Analyte	Conc.	EAL	Units
Lead	**1,300**	200	mg/kg
Mercury	**57**	4.7	mg/kg
PCB-1260	**2.17**	1.1	mg/kg

RHS-DU-7

Analyte	Conc.	EAL	Units
Mercury	**6.1**	4.7	mg/kg

RHS-DU-14

Analyte	Conc.	EAL	Units
Lead	**240**	200	mg/kg
Mercury	**8.2**	4.7	mg/kg

RHS-DU-15

Analyte	Conc.	EAL	Units
Lead	**360**	200	mg/kg
Mercury	**14**	4.7	mg/kg

RHS-DU-16

Analyte	Conc.	EAL	Units
Mercury	**5.0**	4.7	mg/kg

RHS-DU-17

Analyte	Conc.	EAL	Units
Lead	**1,100**	200	mg/kg
Mercury	**73**	4.7	mg/kg
PCB 1260	**2.23**	1.1	mg/kg

RHS-DU-11

Analyte	Conc.	EAL	Units
Lead	**1,000**	200	mg/kg
Mercury	**68**	4.7	mg/kg
PCB-1260	**3.27**	1.1	mg/kg

RHS-DU-10

Analyte	Conc.	EAL	Units
Lead	**490**	200	mg/kg
Mercury	**23**	4.7	mg/kg

RHS-DU-20

Analyte	Conc.	EAL	Units
Mercury	**18**	4.7	mg/kg

RHS-DU-22

Analyte	Conc.	EAL	Units
Mercury	**18**	4.7	mg/kg

RHS-DU-9

Analyte	Conc.	EAL	Units
Lead	**660**	200	mg/kg
Mercury	**18**	4.7	mg/kg
Benzo(a)pyrene	**0.17**	0.15	mg/kg
Dioxin TEQ	**290**	240	ng/kg

RHS-DU-23

Analyte	Conc.	EAL	Units
Lead	**500**	200	mg/kg
Mercury	**200**	4.7	mg/kg
Benzo(a)pyrene	**0.15**	0.15	mg/kg
PCB-1260	**1.46**	1.1	mg/kg

RHS-DU-8

Analyte	Conc.	EAL	Units
Lead	**260**	200	mg/kg
Mercury	**21**	4.7	mg/kg

RHS-DU-24

Analyte	Conc.	EAL	Units
Mercury	**4.8**	4.7	mg/kg

RHS-DU-29

Analyte	Conc.	EAL	Units
Mercury	**5.1**	4.7	mg/kg

BUREAU VERITAS

Legend:

Analyte Detected Greater than the HDOH Unrestricted EALs or the HDOH 2010 TEQ Dioxin SALs

N

0 15' 30' 60' 120'

Project No.: 17012-012148.00	Decision Unit Area Results Exceeding HDOH Tier 1 EALS
Date: 3/20/14	Radford High School 4361 Salt Lake Blvd. Honolulu, Oahu, Hawaii 96818
Revised By: JC	
Checked By: KG	State of Hawaii Department of Education

FIGURE 3

TABLES

Table 1
Analytical Results for Initial Soil Sample
State of Hawaii Department of Education
Radford High School Track and Field Investigation
Honolulu, Oahu, Hawaii

Project No: 17012-012148.00 / Task 048

Analytes	Sample ID: / Date Sampled: / Units:	**RHS-01** 12/20/2013 mg/kg	HDOH Tier 1 EAL
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015B			
TPH-Diesel Range Organics		24	100
TPH-Residual Range Organics		23	500
Total Metals / EPA Method 6010B/7471			
Arsenic		**43***	24
Barium		940	1,000
Cadmium		**26***	14
Chromium		210	1,100
Lead		**5,300***	200
Selenium		ND< 10	78
Silver		14	78
Mercury		1.1	4.7
Semi-volatile Organic Compounds (SVOCs) / EPA Method 8270C			
1,2,4-Trichlorobenzene		*ND< 0.69*	0.098
1,2-Dichlorobenzene		ND< 0.69	0.75
1,3-Dichlorobenzene		*ND< 0.69*	0.57
1,4-Dichlorobenzene		*ND< 0.69*	0.047
1-Methylnaphthalene		ND< 0.73	1.8
2,4,5-Trichlorophenol		ND< 0.69	29
2,4,6-Trichlorophenol		ND< 0.69	1.8
2,4-Dichlorophenol		*ND< 0.69*	0.025
2,4-Dimethylphenol		ND< 0.69	9.9
2,4-Dinitrophenol		ND< 1.4	5.6
2,4-Dinitrotoluene		*ND< 0.69*	0.021
2,6-Dinitrotoluene		ND< 0.69	3.6
2-Chloronaphthalene		ND< 0.69	NS
2-Chlorophenol		*ND< 0.69*	0.0092
2-Methylnaphthalene		0.25	4.1
2-Methylphenol		ND< 0.69	NS
2-Nitroaniline		ND< 0.69	NS
2-Nitrophenol		ND< 0.69	NS
3,3'-Dichlorobenzidine		*ND< 1.7*	0.079
3 & 4 Methylphenol		ND< 0.69	NS
3-Nitroaniline		ND< 0.69	NS
4,6-Dinitro-2-methylphenol		ND< 0.88	NS
4-Bromophenyl phenyl ether		ND< 0.69	NS

Notes on page 3

Table 1 (continued)

Total Metals / EPA Method 6010B/7471 (Continued)		
4-Chloro-3-methylphenol	ND< 0.69	NS
4-Chloroaniline	*ND< 0.69*	0.0063
4-Chlorophenyl phenyl ether	ND< 0.69	NS
4-Nitroaniline	ND< 1.7	NS
4-Nitrophenol	ND< 1.7	NS
Acenaphthene	ND< 0.69	120
Acenaphthylene	ND< 0.69	100
Anthracene	ND< 0.69	4.3
Benzo[a]anthracene	ND< 0.69	1.5
Benzo[a]pyrene	*ND< 0.69*	0.15
Benzo[b]fluoranthene	0.15	1.5
Benzo[g,h,i]perylene	ND< 0.69	35
Benzo[k]fluoranthene	ND< 0.69	15
Benzoic acid	ND< 1.7	NS
Benzyl alcohol	ND< 0.69	NS
Bis(2-chloroisopropyl)ether	ND< 0.69	NS
Bis(2-chloroethoxy)methane	ND< 0.69	NS
Bis(2-chloroethyl)ether	*ND< 0.69*	0.000064
Bis(2-ethylhexyl) phthalate	ND< 0.69	35
Butyl benzyl phthalate	ND< 0.69	NS
Carbazole	ND< 0.69	NS
Chrysene	ND< 0.69	30
Dibenzo(a,h)anthracene	*ND< 0.88*	0.15
Dibenzofuran	ND< 0.69	NS
Diethyl phthalate	ND< 0.69	16
Dimethyl phthalate	ND< 0.69	22
Di-n-butyl phthalate	ND< 0.69	NS
Di-n-octyl phthalate	ND< 0.69	NS
Fluoranthene	ND< 0.69	460
Fluorene	ND< 0.69	100
Hexachlorobenzene	*ND< 0.69*	0.30
Hexachlorobutadiene	*ND< 0.69*	0.18
Hexachlorocyclopentadiene	ND< 1.7	NS
Hexachloroethane	*ND< 0.69*	0.27
Indeno[1,2,3-cd]pyrene	0.49	1.5
Isophorone	ND< 0.69	0.77
Naphthalene	2.7	4.4
Nitrobenzene	*ND< 0.69*	0.0046
N-Nitrosodi-n-propylamine	ND< 0.52	NS
N-Nitrosodiphenylamine	ND< 0.69	NS
Pentachlorophenol	*ND< 1.7*	0.82
Phenanthrene	ND< 0.69	440
Phenol	*ND< 0.69*	0.16
Pyrene	ND< 0.69	44

Notes on page 3

Table 1 (continued)

Polychlorinated Biphenyls (PCBs) / EPA Method 8082		
PCB-1016	ND< 0.026	1.1
PCB-1221	ND< 0.026	1.1
PCB-1232	ND< 0.026	1.1
PCB-1242	ND< 0.026	1.1
PCB-1248	ND< 0.026	1.1
PCB-1254	ND< 0.026	1.1
PCB-1260	0.094	1.1
Organochlorine Pesticides / EPA Method 8081A		
p,p'-DDD	ND< 0.0026	2.0
p,p'-DDE	0.0046	1.4
p,p'-DDT	0.0045	1.7
Aldrin	ND< 0.0026	0.92
alpha-BHC	ND< 0.0026	NS
beta-BHC	ND< 0.0026	NS
delta-BHC	ND< 0.0052	NS
Chlordane (technical)	ND< 0.026	16
Dieldrin	0.0035	1.5
Endosulfan I	ND< 0.0026	18
Endosulfan II	ND< 0.0026	NS
Endosulfan sulfate	ND< 0.0052	NS
Endrin	0.00086	3.7
Endrin aldehyde	0.0035	NS
Endrin ketone	ND< 0.0026	NS
gamma-BHC (Lindane)	ND< 0.0026	0.075
Heptachlor	ND< 0.0026	0.11
Heptachlor epoxide	ND< 0.0026	0.053
Methoxychlor	ND< 0.0026	16
Toxaphene	ND< 0.10	0.44
Dioxins and Furans / EPA Method 8290		
TEQ	**0.00201939***	0.00024

Notes:

Bold*	The value exceeds the State of Hawaii Department of Health (HDOH) Tier 1 Environmental Action Levels (EAL) for unrestricted land use.
HDOH Tier 1 EAL	The State of Hawaii Department of Health (HDOH) Tier 1 Environmental Action Levels (EAL) for sites where groundwater is a current or potential source of drinking water, and the site is greater than 150 meters from a surface water body. (Fall 2011, updated January 2012).
Italics	Reporting Limit is above the HDOH Tier 1 EAL.
mg/kg	milligrams per kilogram.
ND<	No detectable concentration. The number following the "less than" symbol is the laboratory reporting limit.
NS	No standard. The HDOH has not established a Tier 1 EAL for this analyte.
TEQ	Toxic equivalency. Calculating the total TEQ of a mixture involves multiplying the concentrations of individual congeners by their respective TEF, then adding the individual TEQ's to obtain a total TEQ concentration for the mixture.

Table 2
Dioxin Toxic Equivalency (TEQ) Calculations for Initial Soil Sample
State of Hawaii Department of Education
Radford High School Track and Field Investigation
Honolulu, Oahu, Hawaii

Project No: 17012-012148.00 / Task 048

PCDD/F Analytes	TEF	RHS-01 Analytical Results (pg/g)	RHS-01 TEF Adjusted Conc. (pg/g)
2,3,7,8-TCDD	1	88	88.0
1,2,3,7,8-PeCDD	1	340	340.00
1,2,3,4,7,8-HxCDD	0.1	250	25.00
1,2,3,6,7,8-HxCDD	0.1	420	42.00
1,2,3,7,8,9-HxCDD	0.1	320	32.00
1,2,3,4,6,7,8-HpCDD	0.01	2,400	24.0
OCDD	0.0003	5,600	1.68
2,3,7,8-TCDF	0.1	1,400	140.00
1,2,3,7,8-PeCDF	0.03	1,100	33.000
2,3,4,7,8-PeCDF	0.3	2,300	690.00
1,2,3,4,7,8-HxCDF	0.1	1,900	190.00
1,2,3,6,7,8-HxCDF	0.1	1,400	140.00
1,2,3,7,8,9-HxCDF	0.1	ND<100	5.00
2,3,4,6,7,8-HxCDF	0.1	1,900	190.00
1,2,3,4,6,7,8-HpCDF	0.01	7,600	76.00
1,2,3,4,7,8,9-HpCDF	0.01	220	2.200
OCDF	0.0003	1,700	0.510
Total TEQ (ng/kg)			**2,019.39**

Notes:

ND<	Analyte not detected. The value after the '<' is the laboratory Reporting Limit (RL)
ng/kg	nanograms per kilogram (equivalent to parts per trillion [ppt])
TEF	Toxicity equivalency factor. TEF is the ratio of the toxicity of one of the compounds to the toxicity of the two most toxic compounds.
TEQ	Toxic equivalency. Calculating the total TEQ of a mixture involves multiplying the concentrations of individual congeners by their respective TEF, then adding the individual TEQ's to obtain a total TEQ concentration for the mixture.
HxCDD	Hexachlorodibenzo-p-dioxin
HxCDF	Hexachlorodibenzofuran
OCDD	Octachlorodibenzo-*p*-dioxin
OCDF	Octachlorodibenzofuran
PCDD	Pentachlorodibenzo-*p*-dioxin
PCDF	Pentachlorodibenzofuran
pg/g	Picograms per liter (parts per quadrillion [ppq])
TCDD	Tetrachlorodibenzo-*p*-dioxin
TCDF	Tetrachlorodibenzofuran

Table 3
Analytical Results for Soil Samples from Decision Unit Areas
State of Hawaii Department of Education
Radford High School Track and Field Investigation
Honolulu, Oahu, Hawaii

Project No: 17012-012148.00 / Task 048

Sample ID: / Date Sampled: / Analytes / Units:	RHS-DU-1 2/4/2014 mg/kg	RHS-DU-2 2/4/2014 mg/kg	RHS-DU-3 2/4/2014 mg/kg	RHS-DU-4 2/4/2014 mg/kg	RHS-DU-5 2/4/2014 mg/kg	RHS-DU-6 2/4/2014 mg/kg	RHS-DU-7 2/4/2014 mg/kg	RHS-DU-8 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
Dioxin / EPA Method 8290									
Total Dioxin Toxic Equivalent (TEQ) □	**710***	**290***	25	35	33	63	110	160	240 □
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015B									
TPH-Diesel Range Organics	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	500
TPH-Residual Range Organics	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	500
Total Metals / EPA Method 6010B/7471									
Arsenic	**35***	11	6.0	7.5	6.1	7.6	7.3	6.8	24
Barium	**1,200***	550	410	460	280	200	280	320	1,000
Cadmium	**14***	5.9	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.0	1.3	14
Chromium	300	150	160	170	180	240	230	170	1,100
Lead	**4,800***	**1,600***	85	140	61	66	190	**260***	200
Selenium	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Silver	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Mercury	**5.2***	**15***	**5.7***	3.5	2.9	3.3	**6.1***	**21***	4.7
Polychlorinated Biphenyls (PCBs) / EPA Method 8082									
PCB-1016	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.1
PCB-1221	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1232	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1242	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1248	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1254	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1260	ND< 0.05	0.10	0.21	ND< 0.05	0.05	ND< 0.05	0.09	0.17	1.1
Semi-volatile Organic Compounds (SVOCs) / EPA Method 8270C									
1,2,4-Trichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.098
1,2-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.75
1,2-Dinitrobenzene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
1,3-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.57
1,3-Dinotrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1,4-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.047
1,4-Dinitrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1-Methylnapthalene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.8
2,3,4,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.9
2,3,5,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2,4,5-Trichlorophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	29
2,4,6-Trichlorophenol	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	1.8

Notes on page 13

Table 3 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-1 2/4/2014 mg/kg	RHS-DU-2 2/4/2014 mg/kg	RHS-DU-3 2/4/2014 mg/kg	RHS-DU-4 2/4/2014 mg/kg	RHS-DU-5 2/4/2014 mg/kg	RHS-DU-6 2/4/2014 mg/kg	RHS-DU-7 2/4/2014 mg/kg	RHS-DU-8 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)										
2,4-Dichlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.025
2,4-Dimethylphenol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	9.9
2,4-Dinitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	5.6
2,4-Dinitrotoluene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.021
2,6-Dinitrotoluene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	3.6
2-Chloronaphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Chlorophenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0092
2-Methylnapthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.1
2-Methylphenol (o-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
2-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
3,4-Methylphenol (m,p-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Bromophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Chloro-3-methylphenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Chloroaniline		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0063
4-Chlorophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
Acenaphthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	120
Acenaphthylene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100
Aniline		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	4.3
Azobenzene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Benzo(a)anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.11	1.5
Benzo(a)pyrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Benzo(b)fluoranthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.12	1.5
Benzo(ghi)perylene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	35
Benzo(k)fluoranthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.20	15
Benzyl alcohol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethoxy) methane		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethyl) ether		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.000064
Bis (2-chloroisopropyl) ether		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0035
Bis (2-ethylhexyl) phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	35
Bis(2-ethylhexyl) adipate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Butylbenzylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Carbazole		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Chrysene		ND< 0.1	ND< 0.1	0.13	0.12	ND< 0.1	0.20	0.19	0.34	30
Dibenzo(a,h)anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Dibenzofuran		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Diethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	16
Dimethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	22

Notes on page 13

Table 3 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-1 2/4/2014 mg/kg	RHS-DU-2 2/4/2014 mg/kg	RHS-DU-3 2/4/2014 mg/kg	RHS-DU-4 2/4/2014 mg/kg	RHS-DU-5 2/4/2014 mg/kg	RHS-DU-6 2/4/2014 mg/kg	RHS-DU-7 2/4/2014 mg/kg	RHS-DU-8 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)										
Di-n-butylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Di-n-octyl phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Fluoranthene		ND< 0.1	0.12	0.12	ND< 0.1	ND< 0.1	0.17	0.21	0.43	460
Fluorene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100
Hexachlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.3
Hexachlorobutadiene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.18
Hexachlorocyclopentadiene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Hexacholorethane		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.27
Indeno(1,2,3-cd)pyrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Isophorone		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.77
Naphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.4
Nitrobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0046
N-Nitroso-di-n-propylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
N-nitrosodiphenylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Pentachlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.82
Phenanthrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.12	440
Phenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.16
Pyrene		ND< 0.1	0.15	0.14	0.10	ND< 0.1	0.17	0.23	0.42	44
Pyridine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Organochlorine Pesticides / EPA Method 8081A										
Aldrin		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.92
Alpha-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Alpha-Chlordane		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Beta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Chlordane (technical)		ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	16
Delta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Dieldrin		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	0.017	0.045	1.5
Endosulfan I		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	18
Endosulfan II		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endosulfan sulfate		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	3.7
Endrin aldehyde		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin ketone		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Gamma-BHC (Lindane)		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.075
Gamma-Chlordane		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Heptachlor		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.11
Heptachlor epoxide		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.053
Methoxychlor		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	16
p,p'-DDD		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	2
p,p'-DDE		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	0.010	ND< 0.010	1.4
p,p'-DDT		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	0.011	1.7
Toxaphene		ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.44

Notes on page 13

Table 3 (Continued)

Sample ID:	RHS-DU-9	RHS-DU-10	RHS-DU-11	RHS-DU-12	RHS-DU-13	RHS-DU-14	RHS-DU-15	HDOH Tier 1
Date Sampled:	2/4/2014	2/5/2014	2/5/2014	2/5/2014	2/5/2014	2/4/2014	2/4/2014	EAL
Analytes Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Dioxin / EPA Method 8290								
Total Dioxin Toxic Equivalent (TEQ) □	**290***	110	220	230	**380***	61	110	240 □
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015B								
TPH-Diesel Range Organics	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	500
TPH-Residual Range Organics	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	500
Total Metals / EPA Method 6010B/7471								
Arsenic	8.7	12	19	23	19	12	15	24
Barium	320	370	522	670	740	260	270	1,000
Cadmium	1.6	1.7	3.7	7.1	6.8	ND< 1.0	1.4	14
Chromium	110	180	200	210	240	220	190	1,100
Lead	**660***	**490***	**1,000***	**1,300***	**2,800***	**240***	**360***	200
Selenium	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Silver	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Mercury	**18***	**23***	**68***	**57***	**23***	**8.2***	**14***	4.7
Polychlorinated Biphenyls (PCBs) / EPA Method 8082								
PCB-1016	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.1
PCB-1221	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1232	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1242	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1248	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1254	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1260	0.32	0.66	**3.27***	**2.17***	1.00	0.13	0.23	1.1
Semi-volatile Organic Compounds (SVOCs) / EPA Method 8270C								
1,2,4-Trichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.098
1,2-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.75
1,2-Dinitrobenzene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
1,3-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.57
1,3-Dinotrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1,4-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.047
1,4-Dinitrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1-Methylnapthalene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.8
2,3,4,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.9
2,3,5,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2,4,5-Trichlorophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	29
2,4,6-Trichlorophenol	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	1.8
2,4-Dichlorophenol	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.025
2,4-Dimethylphenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	9.9
2,4-Dinitrophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	5.6
2,4-Dinitrotoluene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.021
2,6-Dinitrotoluene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	3.6

Notes on page 13

Table 3 (Continued)

Sample ID: / Date Sampled: / Analytes / Units:	RHS-DU-9 2/4/2014 mg/kg	RHS-DU-10 2/5/2014 mg/kg	RHS-DU-11 2/5/2014 mg/kg	RHS-DU-12 2/5/2014 mg/kg	RHS-DU-13 2/5/2014 mg/kg	RHS-DU-14 2/4/2014 mg/kg	RHS-DU-15 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)								
2-Chloronaphthalene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Chlorophenol	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0092
2-Methylnapthalene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.1
2-Methylphenol (o-cresol)	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Nitroaniline	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
2-Nitrophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
3,4-Methylphenol (m,p-cresol)	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Bromophenylphenylether	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Chloro-3-methylphenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Chloroaniline	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0063
4-Chlorophenylphenylether	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Nitroaniline	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Nitrophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
Acenaphthene	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	120
Acenaphthylene	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100
Aniline	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Anthracene	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	4.3
Azobenzene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Benzo(a)anthracene	0.26	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(a)pyrene	**0.17***	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Benzo(b)fluoranthene	0.33	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(ghi)perylene	0.35	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	35
Benzo(k)fluoranthene	0.35	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	15
Benzyl alcohol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethoxy) methane	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethyl) ether	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.000064
Bis (2-chloroisopropyl) ether	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0035
Bis (2-ethylhexyl) phthalate	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	35
Bis(2-ethylhexyl) adipate	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Butylbenzylphthalate	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Carbazole	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Chrysene	0.58	0.14	0.20	0.13	ND< 0.1	ND< 0.1	ND< 0.1	30
Dibenzo(a,h)anthracene	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Dibenzofuran	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Diethylphthalate	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	16
Dimethylphthalate	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	22
Di-n-butylphthalate	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Di-n-octyl phthalate	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Fluoranthene	0.50	0.16	0.18	0.11	ND< 0.1	ND< 0.1	ND< 0.1	460
Fluorene	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100

Notes on page 13

Table 3 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-9 2/4/2014 mg/kg	RHS-DU-10 2/5/2014 mg/kg	RHS-DU-11 2/5/2014 mg/kg	RHS-DU-12 2/5/2014 mg/kg	RHS-DU-13 2/5/2014 mg/kg	RHS-DU-14 2/4/2014 mg/kg	RHS-DU-15 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)									
Hexachlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.3
Hexachlorobutadiene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.18
Hexachlorocyclopentadiene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Hexacholorethane		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.27
Indeno(1,2,3-cd)pyrene		0.35	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Isophorone		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.77
Naphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.4
Nitrobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0046
N-Nitroso-di-n-propylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
N-nitrosodiphenylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Pentachlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.82
Phenanthrene		0.13	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	440
Phenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.16
Pyrene		0.50	0.18	0.23	0.14	ND< 0.1	ND< 0.1	ND< 0.1	44
Pyridine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Organochlorine Pesticides / EPA Method 8081A									
Aldrin		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.92
Alpha-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Alpha-Chlordane		ND< 0.005	0.006	ND< 0.005	ND< 0.005	ND< 0.005	0.006	ND< 0.005	NS
Beta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Chlordane (technical)		ND< 0.050	ND< 0.050	0.113	0.127	ND< 0.050	ND< 0.050	ND< 0.050	16
Delta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Dieldrin		ND< 0.010	0.027	0.034	ND< 0.010	ND< 0.010	0.014	ND< 0.010	1.5
Endosulfan I		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	18
Endosulfan II		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endosulfan sulfate		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	3.7
Endrin aldehyde		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin ketone		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Gamma-BHC (Lindane)		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.075
Gamma-Chlordane		ND< 0.005	0.006	0.024	0.014	0.022	ND< 0.005	ND< 0.005	NS
Heptachlor		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.11
Heptachlor epoxide		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.053
Methoxychlor		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	16
p,p'-DDD		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	2
p,p'-DDE		ND< 0.010	ND< 0.010	ND< 0.010	0.036	0.016	0.012	ND< 0.010	1.4
p,p'-DDT		0.021	0.040	0.216	0.174	0.051	0.012	0.021	1.7
Toxaphene		ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.44

Notes on page 13

Table 3 (Continued)

Sample ID: / Date Sampled: / Analytes Units:	RHS-DU-16 2/4/2014 mg/kg	RHS-DU-17 2/4/2014 mg/kg	RHS-DU-18 2/4/2014 mg/kg	RHS-DU-19 2/4/2014 mg/kg	RHS-DU-20 2/4/2014 mg/kg	RHS-DU-21 2/4/2014 mg/kg	RHS-DU-22 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
Dioxin / EPA Method 8290								
Total Dioxin Toxic Equivalent (TEQ) □	44	230	**690***	**540***	19	18	39	240 □
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015B								
TPH-Diesel Range Organics	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	500
TPH-Residual Range Organics	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	500
Total Metals / EPA Method 6010B/7471								
Arsenic	5.4	23	**26***	**26***	6.4	18	6.9	24
Barium	220	590	710	610	290	810	320	1,000
Cadmium	ND< 1.0	4.5	11	7.8	ND< 1.0	12	ND< 1.0	14
Chromium	150	210	170	160	190	240	130	1,100
Lead	95	**1,100***	**6,200***	**2,300***	120	**2,300***	110	200
Selenium	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Silver	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Mercury	**5.0***	**73***	**45***	**45***	**18***	**20***	**18***	4.7
Polychlorinated Biphenyls (PCBs) / EPA Method 8082								
PCB-1016	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.1
PCB-1221	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1232	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1242	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1248	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1254	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1260	ND< 0.05	**2.23***	**1.19***	0.47	0.29	0.20	0.25	1.1
Semi-volatile Organic Compounds (SVOCs) / EPA Method 8270C								
1,2,4-Trichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.098
1,2-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.75
1,2-Dinitrobenzene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
1,3-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.57
1,3-Dinotrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1,4-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.047
1,4-Dinitrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1-Methylnapthalene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.8
2,3,4,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.9
2,3,5,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2,4,5-Trichlorophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	29
2,4,6-Trichlorophenol	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	1.8
2,4-Dichlorophenol	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.025
2,4-Dimethylphenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	9.9
2,4-Dinitrophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	5.6
2,4-Dinitrotoluene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.021
2,6-Dinitrotoluene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	3.6

Notes on page 13

Table 3 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-16 2/4/2014 mg/kg	RHS-DU-17 2/4/2014 mg/kg	RHS-DU-18 2/4/2014 mg/kg	RHS-DU-19 2/4/2014 mg/kg	RHS-DU-20 2/4/2014 mg/kg	RHS-DU-21 2/4/2014 mg/kg	RHS-DU-22 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)									
2-Chloronaphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Chlorophenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0092
2-Methylnapthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.1
2-Methylphenol (o-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
2-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
3,4-Methylphenol (m,p-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Bromophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Chloro-3-methylphenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Chloroaniline		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0063
4-Chlorophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
Acenaphthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	120
Acenaphthylene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100
Aniline		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	4.3
Azobenzene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Benzo(a)anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(a)pyrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Benzo(b)fluoranthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(ghi)perylene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	35
Benzo(k)fluoranthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	15
Benzyl alcohol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethoxy) methane		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethyl) ether		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.000064
Bis (2-chloroisopropyl) ether		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0035
Bis (2-ethylhexyl) phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	35
Bis(2-ethylhexyl) adipate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Butylbenzylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Carbazole		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Chrysene		0.10	0.16	0.12	0.11	0.15	0.12	0.40	30
Dibenzo(a,h)anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Dibenzofuran		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Diethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	16
Dimethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	22
Di-n-butylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Di-n-octyl phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Fluoranthene		0.10	0.13	0.11	ND< 0.1	0.22	0.15	0.49	460
Fluorene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100

Notes on page 13

Table 3 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-16 2/4/2014 mg/kg	RHS-DU-17 2/4/2014 mg/kg	RHS-DU-18 2/4/2014 mg/kg	RHS-DU-19 2/4/2014 mg/kg	RHS-DU-20 2/4/2014 mg/kg	RHS-DU-21 2/4/2014 mg/kg	RHS-DU-22 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)									
Hexachlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.3
Hexachlorobutadiene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.18
Hexachlorocyclopentadiene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Hexacholorethane		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.27
Indeno(1,2,3-cd)pyrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Isophorone		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.77
Naphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.4
Nitrobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0046
N-Nitroso-di-n-propylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
N-nitrosodiphenylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Pentachlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.82
Phenanthrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.20	440
Phenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.16
Pyrene		0.10	0.17	0.12	0.12	0.20	0.16	0.41	44
Pyridine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Organochlorine Pesticides / EPA Method 8081A									
Aldrin		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.92
Alpha-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Alpha-Chlordane		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Beta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Chlordane (technical)		0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	16
Delta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Dieldrin		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	1.5
Endosulfan I		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	18
Endosulfan II		ND< 0.010	ND< 0.010	0.054	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endosulfan sulfate		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	3.7
Endrin aldehyde		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin ketone		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Gamma-BHC (Lindane)		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.075
Gamma-Chlordane		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Heptachlor		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.11
Heptachlor epoxide		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.053
Methoxychlor		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	16
p,p'-DDD		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	0.013	ND< 0.010	ND< 0.010	2
p,p'-DDE		ND< 0.010	ND< 0.010	0.030	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	1.4
p,p'-DDT		ND< 0.010	0.164	0.132	0.025	0.019	0.015	0.022	1.7
Toxaphene		ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.44

Notes on page 13

Table 3 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-23 2/4/2014 mg/kg	RHS-DU-24 2/4/2014 mg/kg	RHS-DU-25 2/4/2014 mg/kg	RHS-DU-26 2/4/2014 mg/kg	RHS-DU-27 2/4/2014 mg/kg	RHS-DU-28 2/4/2014 mg/kg	RHS-DU-29 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
Dioxin / EPA Method 8290									
Total Dioxin Toxic Equivalent (TEQ) □		18	17	20	33	22	14	21	240 □
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015B									
TPH-Diesel Range Organics		ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	500
TPH-Residual Range Organics		ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	500
Total Metals / EPA Method 6010B/7471									
Arsenic		18	5.1	5.8	5.3	6.3	4.6	5.7	24
Barium		340	270	280	100	85	91	99	1,000
Cadmium		1.9	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	14
Chromium		150	140	190	250	230	250	270	1,100
Lead		**500***	110	120	89	59	44	68	200
Selenium		ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Silver		ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Mercury		**200***	**4.8***	4.4	3.5	2.9	3.1	**5.1***	4.7
Polychlorinated Biphenyls (PCBs) / EPA Method 8082									
PCB-1016		ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.1
PCB-1221		ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1232		ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1242		ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1248		ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1254		ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1260		**1.46***	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
Semi-volatile Organic Compounds (SVOCs) / EPA Method 8270C									
1,2,4-Trichlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.098
1,2-Dichlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.75
1,2-Dinitrobenzene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
1,3-Dichlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.57
1,3-Dinotrobenzene		ND< 5.0	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	NS
1,4-Dichlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.047
1,4-Dinitrobenzene		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1-Methylnapthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.8
2,3,4,6-Tetrachlorophenol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.9
2,3,5,6-Tetrachlorophenol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2,4,5-Trichlorophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	29
2,4,6-Trichlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	1.8
2,4-Dichlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.025
2,4-Dimethylphenol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	9.9
2,4-Dinitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	5.6
2,4-Dinitrotoluene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.021
2,6-Dinitrotoluene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	3.6

Notes on page 13

Table 3 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-23 2/4/2014 mg/kg	RHS-DU-24 2/4/2014 mg/kg	RHS-DU-25 2/4/2014 mg/kg	RHS-DU-26 2/4/2014 mg/kg	RHS-DU-27 2/4/2014 mg/kg	RHS-DU-28 2/4/2014 mg/kg	RHS-DU-29 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)									
2-Chloronaphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Chlorophenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0092
2-Methylnapthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.1
2-Methylphenol (o-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
2-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
3,4-Methylphenol (m,p-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Bromophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Chloro-3-methylphenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Chloroaniline		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0063
4-Chlorophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
Acenaphthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	120
Acenaphthylene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100
Aniline		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	4.3
Azobenzene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Benzo(a)anthracene		0.16	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(a)pyrene		**0.15***	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Benzo(b)fluoranthene		0.31	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(ghi)perylene		0.44	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	35
Benzo(k)fluoranthene		0.33	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	15
Benzyl alcohol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethoxy) methane		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethyl) ether		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.000064
Bis (2-chloroisopropyl) ether		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0035
Bis (2-ethylhexyl) phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	35
Bis(2-ethylhexyl) adipate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Butylbenzylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Carbazole		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Chrysene		0.48	0.21	0.11	ND< 0.1	ND< 0.1	0.10	0.14	30
Dibenzo(a,h)anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Dibenzofuran		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Diethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	16
Dimethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	22
Di-n-butylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Di-n-octyl phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Fluoranthene		0.49	0.13	0.11	ND< 0.1	ND< 0.1	0.11	0.10	460
Fluorene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100

Notes on page 13

Table 3 (Continued)

Sample ID: / Date Sampled: / Analytes / Units:	RHS-DU-23 2/4/2014 mg/kg	RHS-DU-24 2/4/2014 mg/kg	RHS-DU-25 2/4/2014 mg/kg	RHS-DU-26 2/4/2014 mg/kg	RHS-DU-27 2/4/2014 mg/kg	RHS-DU-28 2/4/2014 mg/kg	RHS-DU-29 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)								
Hexachlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.3
Hexachlorobutadiene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.18
Hexachlorocyclopentadiene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Hexacholorethane	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.27
Indeno(1,2,3-cd)pyrene	0.38	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Isophorone	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.77
Naphthalene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.4
Nitrobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0046
N-Nitroso-di-n-propylamine	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
N-nitrosodiphenylamine	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Pentachlorophenol	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.82
Phenanthrene	0.16	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	440
Phenol	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.16
Pyrene	0.50	0.14	0.11	ND< 0.1	ND< 0.1	0.10	0.10	44
Pyridine	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Organochlorine Pesticides / EPA Method 8081A								
Aldrin	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.92
Alpha-BHC	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Alpha-Chlordane	0.011	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Beta-BHC	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Chlordane (technical)	0.057	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	16
Delta-BHC	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Dieldrin	0.017	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	1.5
Endosulfan I	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	18
Endosulfan II	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endosulfan sulfate	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	3.7
Endrin aldehyde	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin ketone	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Gamma-BHC (Lindane)	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.075
Gamma-Chlordane	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Heptachlor	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.11
Heptachlor epoxide	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.053
Methoxychlor	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	16
p,p'-DDD	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	2
p,p'-DDE	0.011	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	1.4
p,p'-DDT	0.074	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	1.7
Toxaphene	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.44

Notes on page 13

Table 3 (Continued)

Notes:

□	Dioxin Toxic Equivalent (TEQ) reported in nanograms per kilogram (not milligrams per kilogram).
Bold*	The value exceeds the State of Hawaii Department of Health (HDOH) Tier 1 Environmental Action Levels (EAL) .
HDOH Tier 1 EAL	The State of Hawaii Department of Health (HDOH) Tier 1 Environmental Action Level (EAL) for sites where groundwater is a current or potential source of drinking water, and the site is greater than 150 meters from a surface water body. (Fall 2011, updated January 2012).
Italics	Reporting Limit is above the HDOH Tier 1 EAL.
mg/kg	milligrams per kilogram.
ND<	No detectable concentration. The number following the "less than" symbol is the laboratory reporting limit .
NS	No standard. The HDOH has not established a Tier 1 EAL for this analyte.

Table 4
Analytical Results for Replicate Samples
State of Hawaii Department of Education
Radford High School Track and Field Investigation
Honolulu, Oahu, Hawaii

Project No: 17012-012148.00 / Task 048

Sample ID: / Date Sampled: / Analytes / Units:	**RHS-DU-1** 2/4/2014 mg/kg	**RHS-DU-1.2 Δ** 2/5/2014 mg/kg	**RHS-DU-1.3 Δ** 2/5/2014 mg/kg	**RHS-DU-17** 2/4/2014 mg/kg	**RHS-DU-17.2 Δ** 2/4/2014 mg/kg	**RHS-DU-17.3 Δ** 2/4/2014 mg/kg	**RHS-DU-26** 2/4/2014 mg/kg	**RHS-DU-26.2 Δ** 2/4/2014 mg/kg	**RHS-DU-26.3 Δ** 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
Dioxin / EPA Method 8290										
Total Dioxin Toxic Equivalent (TEQ) □	**710***	**890***	**2,900***	230	**290***	**280***	33	19	20	240 □
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015B										
TPH-Diesel Range Organics	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	500
TPH-Residual Range Organics	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	500
Total Metals / EPA Method 6010B/7471										
Arsenic	**35***	**38***	**28***	23	**24***	**26***	5.3	ND< 5.0	6.2	24
Barium	**1,200***	**1,100***	**1,100***	590	720	670	100	69	85	1,000
Cadmium	**14***	**14***	**26***	4.5	4.6	6.4	ND< 1.0	ND< 1.0	ND< 1.0	14
Chromium	300	230	310	210	220	150	250	220	190	1,100
Lead	**4,800***	**5,800***	**15,000***	**1,100***	**1,600***	**1,600***	89	50	78	200
Selenium	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Silver	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	ND< 20	78
Mercury	**5.2***	**11***	**18***	**73***	**66***	**83***	3.5	2.7	2.9	4.7
Polychlorinated Biphenyls (PCBs) / EPA Method 8082										
PCB-1016	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	ND< 0.10	1.1
PCB-1221	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1232	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	ND< 0.20	1.1
PCB-1242	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1248	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1254	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	ND< 0.05	1.1
PCB-1260	ND< 0.05	ND< 0.05	ND< 0.05	**2.23***	**2.35***	**2.24***	ND< 0.05	ND< 0.05	ND< 0.05	1.1
Semi-volatile Organic Compounds (SVOCs) / EPA Method 8270C										
1,2,4-Trichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.098
1,2-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.75
1,2-Dinitrobenzene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
1,3-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.57
1,3-Dinotrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	NS
1,4-Dichlorobenzene	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.047
1,4-Dinitrobenzene	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
1-Methylnapthalene	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.8
2,3,4,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.9
2,3,5,6-Tetrachlorophenol	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2,4,5-Trichlorophenol	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	29
2,4,6-Trichlorophenol	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	1.8

Notes on page 4

Table 4 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-1 2/4/2014 mg/kg	RHS-DU-1.2 Δ 2/5/2014 mg/kg	RHS-DU-1.3 Δ 2/5/2014 mg/kg	RHS-DU-17 2/4/2014 mg/kg	RHS-DU-17.2 Δ 2/4/2014 mg/kg	RHS-DU-17.3 Δ 2/4/2014 mg/kg	RHS-DU-26 2/4/2014 mg/kg	RHS-DU-26.2 Δ 2/4/2014 mg/kg	RHS-DU-26.3 Δ 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)											
2,4-Dichlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.025
2,4-Dimethylphenol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	9.9
2,4-Dinitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	5.6
2,4-Dinitrotoluene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.021
2,6-Dinitrotoluene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	3.6
2-Chloronaphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Chlorophenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0092
2-Methylnapthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.1
2-Methylphenol (o-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
2-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
2-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
3,4-Methylphenol (m,p-cresol)		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Bromophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Chloro-3-methylphenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Chloroaniline		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0063
4-Chlorophenylphenylether		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
4-Nitroaniline		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
4-Nitrophenol		ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	NS
Acenaphthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	120
Acenaphthylene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100
Aniline		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	4.3
Azobenzene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Benzo(a)anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.18	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(a)pyrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	**0.43***	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Benzo(b)fluoranthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.40	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Benzo(ghi)perylene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.38	ND< 0.1	ND< 0.1	ND< 0.1	35
Benzo(k)fluoranthene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.35	ND< 0.1	ND< 0.1	ND< 0.1	15
Benzyl alcohol		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethoxy) methane		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Bis (2-chloroethyl) ether		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.000064
Bis (2-chloroisopropyl) ether		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.0035
Bis (2-ethylhexyl) phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	35
Bis(2-ethylhexyl) adipate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Butylbenzylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Carbazole		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Chrysene		ND< 0.1	ND< 0.1	ND< 0.1	0.16	0.15	0.46	ND< 0.1	ND< 0.1	ND< 0.1	30
Dibenzo(a,h)anthracene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.15
Dibenzofuran		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Diethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	16
Dimethylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	22

Notes on page 4

Table 4 (Continued)

Analytes	Sample ID: / Date Sampled: / Units:	RHS-DU-1 2/4/2014 mg/kg	RHS-DU-1.2 Δ 2/5/2014 mg/kg	RHS-DU-1.3 Δ 2/5/2014 mg/kg	RHS-DU-17 2/4/2014 mg/kg	RHS-DU-17.2 Δ 2/4/2014 mg/kg	RHS-DU-17.3 Δ 2/4/2014 mg/kg	RHS-DU-26 2/4/2014 mg/kg	RHS-DU-26.2 Δ 2/4/2014 mg/kg	RHS-DU-26.3 Δ 2/4/2014 mg/kg	HDOH Tier 1 EAL mg/kg
SVOCs (Continued)											
Di-n-butylphthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Di-n-octyl phthalate		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Fluoranthene		ND< 0.1	ND< 0.1	ND< 0.1	0.13	0.11	0.31	ND< 0.1	ND< 0.1	ND< 0.1	460
Fluorene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	100
Hexachlorobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.3
Hexachlorobutadiene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.18
Hexachlorocyclopentadiene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Hexacholorethane		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.27
Indeno(1,2,3-cd)pyrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.40	ND< 0.1	ND< 0.1	ND< 0.1	1.5
Isophorone		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.77
Naphthalene		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	4.4
Nitrobenzene		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.0046
N-Nitroso-di-n-propylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
N-nitrosodiphenylamine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Pentachlorophenol		*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	*ND< 5.0*	0.82
Phenanthrene		ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	ND< 0.1	0.12	ND< 0.1	ND< 0.1	ND< 0.1	440
Phenol		*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	*ND< 1.0*	0.16
Pyrene		ND< 0.1	ND< 0.1	ND< 0.1	0.17	0.14	0.33	ND< 0.1	ND< 0.1	ND< 0.1	44
Pyridine		ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	NS
Organochlorine Pesticides / EPA Method 8081A											
Aldrin		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.92
Alpha-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Alpha-Chlordane		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Beta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Chlordane (technical)		ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.225	ND< 0.050	ND< 0.050	ND< 0.050	16
Delta-BHC		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Dieldrin		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	1.5
Endosulfan I		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	18
Endosulfan II		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endosulfan sulfate		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	3.7
Endrin aldehyde		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Endrin ketone		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	NS
Gamma-BHC (Lindane)		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.075
Gamma-Chlordane		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	NS
Heptachlor		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.11
Heptachlor epoxide		ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	ND< 0.005	0.053
Methoxychlor		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	16
p,p'-DDD		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	2
p,p'-DDE		ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	ND< 0.010	1.4
p,p'-DDT		ND< 0.010	ND< 0.010	ND< 0.010	0.164	0.195	0.175	ND< 0.010	ND< 0.010	ND< 0.010	1.7
Toxaphene		ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	ND< 0.050	0.44

Notes on page 4

Table 4 (Continued)

Notes:

Δ	Indicates a duplicate sample.
□	Dioxin Toxic Equivalent (TEQ) reported in nanograms per kilogram (not milligrams per kilogram).
Bold*	The value exceeds the State of Hawaii Department of Health (HDOH) Tier 1 Environmental Action Levels (EAL) .
HDOH Tier 1 EAL	The State of Hawaii Department of Health (HDOH) Tier 1 Environmental Action Level (EAL) for sites where groundwater is a current or potential source of drinking water, and the site is greater than 150 meters from a surface water body. (Fall 2011, updated January 2012).
Italics	Reporting Limit is above the HDOH Tier 1 EAL.
mg/kg	milligrams per kilogram.
ND<	No detectable concentration. The number following the "less than" symbol is the laboratory reporting limit .
NS	No standard. The HDOH has not established a Tier 1 EAL for this analyte.

Table 5
Statistical Calculations for Replicate Samples
State of Hawaii Department of Education
Radford High School Track and Field Investigation
Honolulu, Oahu, Hawaii

Project No: 17012-012148.00 / Task 048

Analyte	EPA Method	Sample Identification	Sample Type	Result	Units	RPD of Primary and Duplicate	RPD of Primary and Triplicate	Mean	Standard Deviation	RSD
Decision Unit 1 - Replicate Samples										
Dioxin	8290	RHS-DU1	Primary	710	ng/kg	22.5%	121.3%	1,500.0	1,215.8	81.1%
		RHS-DU1.2	Duplicate	890	ng/kg					
		RHS-DU1.3	Triplicate	2,900	ng/kg					
Arsenic	6010B	RHS-DU1	Primary	35	mg/kg	8.2%	22.2%	33.7	5.1	15.2%
		RHS-DU1.2	Duplicate	38	mg/kg					
		RHS-DU1.3	Triplicate	28	mg/kg					
Barium	6010B	RHS-DU1	Primary	1,200	mg/kg	8.7%	8.7%	1,133.3	57.7	5.1%
		RHS-DU1.2	Duplicate	1,100	mg/kg					
		RHS-DU1.3	Triplicate	1,100	mg/kg					
Cadmium	6010B	RHS-DU1	Primary	14	mg/kg	0.0%	60.0%	18.0	6.9	38.5%
		RHS-DU1.2	Duplicate	14	mg/kg					
		RHS-DU1.3	Triplicate	26	mg/kg					
Chromium	6010B	RHS-DU1	Primary	300	mg/kg	26.4%	3.3%	280.0	43.6	15.6%
		RHS-DU1.2	Duplicate	230	mg/kg					
		RHS-DU1.3	Triplicate	310	mg/kg					
Lead	6010B	RHS-DU1	Primary	4,800	mg/kg	18.9%	103.0%	8,533.3	5,622.6	65.9%
		RHS-DU1.2	Duplicate	5,800	mg/kg					
		RHS-DU1.3	Triplicate	15,000	mg/kg					
Mercury	7471	RHS-DU1	Primary	5	mg/kg	71.6%	110.3%	11.4	6.4	56.2%
		RHS-DU1.2	Duplicate	11	mg/kg					
		RHS-DU1.3	Triplicate	18	mg/kg					

Notes on page 4

Table 5 (Continued)

Analyte	EPA Method	Sample Identification	Sample Type	Result	Units	RPD of Primary and Duplicate	RPD of Primary and Triplicate	Mean	Standard Deviation	RSD
Decision Unit 17 - Replicate Samples										
Dioxin	8290	RHS-DU17	Primary	230	ng/kg	23.1%	19.6%	266.7	32.1	12.1%
		RHS-DU17.2	Duplicate	290	ng/kg					
		RHS-DU17.3	Triplicate	280	ng/kg					
Arsenic	6010B	RHS-DU17	Primary	23	mg/kg	4.3%	12.2%	24.3	1.5	6.3%
		RHS-DU17.2	Duplicate	24	mg/kg					
		RHS-DU17.3	Triplicate	26	mg/kg					
Barium	6010B	RHS-DU17	Primary	590	mg/kg	19.8%	12.7%	660.0	65.6	9.9%
		RHS-DU17.2	Duplicate	720	mg/kg					
		RHS-DU17.3	Triplicate	670	mg/kg					
Cadmium	6010B	RHS-DU17	Primary	4.5	mg/kg	2.2%	34.9%	5.2	1.1	20.7%
		RHS-DU17.2	Duplicate	4.6	mg/kg					
		RHS-DU17.3	Triplicate	6.4	mg/kg					
Chromium	6010B	RHS-DU17	Primary	210	mg/kg	4.7%	33.3%	193.3	37.9	19.6%
		RHS-DU17.2	Duplicate	220	mg/kg					
		RHS-DU17.3	Triplicate	150	mg/kg					
Lead	6010B	RHS-DU17	Primary	1,100	mg/kg	37.0%	37.0%	1,433.3	288.7	20.1%
		RHS-DU17.2	Duplicate	1,600	mg/kg					
		RHS-DU17.3	Triplicate	1,600	mg/kg					
Mercury	7471	RHS-DU17	Primary	73	mg/kg	10.1%	12.8%	74.0	8.5	11.5%
		RHS-DU17.2	Duplicate	66	mg/kg					
		RHS-DU17.3	Triplicate	83	mg/kg					
Chrysene	8270C	RHS-DU17	Primary	0.16	mg/kg	6.5%	96.8%	0.26	0.18	68.6%
		RHS-DU17.2	Duplicate	0.15	mg/kg					
		RHS-DU17.3	Triplicate	0.46	mg/kg					
Fluroanthene	8270C	RHS-DU17	Primary	0.13	mg/kg	16.7%	81.8%	0.18	0.11	60.1%
		RHS-DU17.2	Duplicate	0.11	mg/kg					
		RHS-DU17.3	Triplicate	0.31	mg/kg					

Notes on page 4

Table 5 (Continued)

Analyte	EPA Method	Sample Identification	Sample Type	Result	Units	RPD of Primary and Duplicate	RPD of Primary and Triplicate	Mean	Standard Deviation	RSD
Decision Unit 17 - Replicate Samples (continued)										
Pyrene	8270C	RHS-DU17	Primary	0.17	mg/kg	19.4%	64.0%	0.21	0.10	47.9%
		RHS-DU17.2	Duplicate	0.14	mg/kg					
		RHS-DU17.3	Triplicate	0.33	mg/kg					
PCB-1260	8082	RHS-DU17	Primary	2.23	mg/kg	5.2%	0.4%	2.27	0.07	2.9%
		RHS-DU17.2	Duplicate	2.35	mg/kg					
		RHS-DU17.3	Triplicate	2.24	mg/kg					
p,p'-DDT	8081A	RHS-DU17	Primary	0.164	mg/kg	17.3%	6.5%	0.18	0.02	8.8%
		RHS-DU17.2	Duplicate	0.195	mg/kg					
		RHS-DU17.3	Triplicate	0.175	mg/kg					
Decision Unit 26 - Replicate Samples										
Dioxin	8290	RHS-DU26	Primary	33	ng/kg	53.8%	49.1%	24.00	7.81	32.5%
		RHS-DU26.2	Duplicate	19	ng/kg					
		RHS-DU26.3	Triplicate	20	ng/kg					
Barium	6010B	RHS-DU26	Primary	100	mg/kg	36.7%	16.2%	84.67	15.50	18.3%
		RHS-DU26.2	Duplicate	69	mg/kg					
		RHS-DU26.3	Triplicate	85	mg/kg					
Chromium	6010B	RHS-DU26	Primary	250	mg/kg	12.8%	27.3%	220.00	30.00	13.6%
		RHS-DU26.2	Duplicate	220	mg/kg					
		RHS-DU26.3	Triplicate	190	mg/kg					
Lead	6010B	RHS-DU26	Primary	89	mg/kg	56.1%	13.2%	72.33	20.11	27.8%
		RHS-DU26.2	Duplicate	50	mg/kg					
		RHS-DU26.3	Triplicate	78	mg/kg					
Mercury	7471	RHS-DU26	Primary	3.5	mg/kg	25.8%	18.8%	3.03	0.42	13.7%
		RHS-DU26.2	Duplicate	2.7	mg/kg					
		RHS-DU26.3	Triplicate	2.9	mg/kg					

Notes on page 4

Table 5 (Continued)

Notes:

ng/kg	Nanograms per kilogram
mg/kg	Milligrams per kilogram
RPD	Relative Percent Difference
RSD	Relative Standard Deviation

PHOTOGRAPHS

Project No.	Description	View of the excavation pits located on the northeaster portion of the Radford High School track, looking north	Photo 1
17012-012148.00 Task 48	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	Photo Date
	Client	State of Hawaii Department of Education	Dec. 20, 2013

Project No.	Description	View of the excavation pit where asbestos containing material was found, looking north	Photo 2
17012-012148.00 Task 48	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	Photo Date
	Client	State of Hawaii Department of Education	Dec. 20, 2013

Project No. **17012-012148.00** **Task 48**	**Description**	Close up view of the asbestos containing material found under the Radford High School track	**Photo 3**
	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	**Photo Date** **Dec. 20, 2013**
	Client	State of Hawaii Department of Education	

Project No. **17012-012148.00** **Task 48**	**Description**	Close up view of the suspect asbestos containing material found under the Radford High School track	**Photo 4**
	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	**Photo Date** **Dec. 20, 2013**
	Client	State of Hawaii Department of Education	

Project No. **17012-012148.00** **Task 48**	**Description**	View of the entrance to the site, looking north	**Photo 5**
	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	**Photo Date** **Feb. 5, 2014**
	Client	State of Hawaii Department of Education	

Project No. **17012-012148.00** **Task 48**	**Description**	View of the northern track portion and stockpiles covered by black fabric, looking north	**Photo 6**
	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	**Photo Date** **Feb. 5, 2014**
	Client	State of Hawaii Department of Education	

Project No.	Description	View of Radford High School field, looking north	Photo 7
17012-012148.00 Task 48	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	Photo Date
	Client	State of Hawaii Department of Education	Feb. 5, 2014

Project No.	Description	View of the southern portion of the track, looking west	Photo 8
17012-012148.00 Task 48	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	Photo Date
	Client	State of Hawaii Department of Education	Feb. 5, 2014

Project No.	Description	View of the western portion of the track, looking south	Photo 9
17012-012148.00 Task 48	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	Photo Date
	Client	State of Hawaii Department of Education	Feb. 5, 2014

Project No.	Description	View of the eastern portion of the track, looking south	Photo 10
17012-012148.00 Task 48	Site Name	Radford High School, 4361 Salt Lake Blvd., Honolulu, Hawaii 96816	Photo Date
	Client	State of Hawaii Department of Education	Feb. 5, 2014

APPENDIX A

LABORATORY ANALYTICAL REPORTS
AND
CHAIN OF CUSTODY FORMS (TESTAMERICA)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
1946 Young St. Suite 400A
Honolulu, HI 96826
Tel: 808-486-5227

TestAmerica Job ID: HWL0089
Client Project/Site: 17012-012148.00
Client Project Description: Radford HS

For:
Bureau Veritas
841 Bishop Street, Suite 1100
Honolulu, HI 96813

Attn: Kenney Gomes

Kristie Reilly

Authorized for release by:
1/24/2014 11:10:32 AM

Kristie Reilly, Project Manager
808-486-5227
Kristie.Brachmann@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.

Table of Contents

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
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
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
q	The isomer is qualified as positively identified, but at an estimated quantity because the quantitation is based on the theoretical ratio for these samples.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD Recovery exceeds the control limits
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
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)

Case Narrative

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Job ID: HWL0089

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was 2 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Samples were prepared in accordance with the State of Hawai'i Department of Health Office of Hazard Evaluation and Emergency Response's Technical Guidance Manual for the Implementation of the Hawai`i State Contingency Plan 2009 edition Laboratory Preparation of Multi-Increment Samples.

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-66219-1

Comments
No additional comments.

Receipt
The sample was received on 12/27/2013 9:15 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.9º C.

GC/MS Semi VOA
Method(s) 8270C: Insufficient sample volume was available to perform batch matrix spike/matrix spike duplicate (MS/MSD) associated with batch 153305. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 8270C: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 153305 recovered outside control limits for the following analytes: 4-nitrophenol, diethyl phthalate, 3-nitroaniline, 2,4-dinitrotoluene, and 4-nitroaniline. The individual LCS/LCSD percent recoveries met acceptance limit.

Method(s) 8270C: The following sample(s) was diluted due to the abundance of non-target analytes: HW0089-01 (440-66219-1). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

Job ID: HWL0089 (Continued)

Laboratory: TestAmerica Irvine (Continued)

GC Semi VOA

Method(s) 8081A: The continuing calibration verification (CCV) associated with batch 153523 recovered above the upper control limit for 4,4 DDD. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: (CCVRT 440-153523/15), HW0089-01 (440-66219-1).

Method(s) 8081A: The capping continuing calibration verification (CCV) associated with batch 153523 did not meet control limits for 4,4 DDD, 4,4 DDT, and Methoxychlor. Samples were re-analyzed for confirmation of results. Sample matrix is suspected to have contributed to this failure. (CCV 440-153523/27), HW0089-01 (440-66219-1)

Method(s) 8082: The %RPD between the primary and confirmation column exceeded 40% for the DCBP for the following sample(s): (440-66257-2 MS), (440-66257-2 MSD). The lower value has been reported and qualified in accordance with the laboratory's SOP.

Method(s) 8082: The %RPD between the primary and confirmation column(s) exceeded 40% for 1260 for the following sample(s): HW0089-01 (440-66219-1). The lower value has been reported and qualified in accordance with the laboratory's SOP.

No other analytical or quality issues were noted.

Organic Prep

No analytical or quality issues were noted.

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative
320-5498-1

Receipt

The sample was received on 12/27/2013 8:55 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

Dioxin

Method(s) 8290:
The following samples were diluted to bring the concentration of one or more target analytes within the calibration range: HWL0089-01 (320-5498-1). Elevated reporting limits (RLs) are provided.

The following sample [320-5498-1] exhibited elevated noise or matrix interferences for one or more analytes requiring the detection limits to be raised appropriately. These analytes were flagged with the "G" qualifier.

The closing bracketing continuing calibration verification (CCV) associated with analytical batch 34312 has the analyte 2,3,7,8-TCDF with a percent difference value that is between the method criteria of 20% to 25% deviation from the initial calibration curve. Per method guidelines, an average relative response factor (RRF) is calculated from the opening and closing bracketing CCV's and is used to quantitate any positive results in the associated samples for the affected analyte.

Ion abundance ratios are outside criteria for one or more analytes in the following samples: (MB 320-33622/1-A), HWL0089-01 (320-5498-1). Quantitation is based on the theoretical ion abundance ratio; therefore, these analytes have been reported as an estimated maximum possible concentration (EMPC). The affected analytes have been flagged.

No other analytical or quality issues were noted.

General Chemistry

No analytical or quality issues were noted.

Dioxin Prep

No analytical or quality issues were noted.

Laboratory: TestAmerica Seattle

Job ID: HWL0089 (Continued)

Laboratory: TestAmerica Seattle (Continued)

Narrative

Receipt
The sample was received on 12/27/2013 9:55 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.7º C.

Metals - Method(s) 6010B
The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analysis batch 151504 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. The data have been "F" qualified and reported.

No other analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

Sample Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWL0089-01	RHS-01	Solid/Soil	12/20/13 15:00	12/23/13 13:10

Detection Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Client Sample ID: RHS-01

Lab Sample ID: HWL0089-01

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	88		21	11	pg/g	20	☼	8290	Total/NA
1,2,3,7,8-PeCDD	340		100	52	pg/g	20	☼	8290	Total/NA
1,2,3,7,8-PeCDF	1100		100	49	pg/g	20	☼	8290	Total/NA
2,3,4,7,8-PeCDF	2300		100	52	pg/g	20	☼	8290	Total/NA
1,2,3,4,7,8-HxCDD	250		100	11	pg/g	20	☼	8290	Total/NA
1,2,3,6,7,8-HxCDD	420		100	8.5	pg/g	20	☼	8290	Total/NA
1,2,3,7,8,9-HxCDD	320		100	8.2	pg/g	20	☼	8290	Total/NA
1,2,3,4,7,8-HxCDF	1900	B	100	85	pg/g	20	☼	8290	Total/NA
1,2,3,6,7,8-HxCDF	1400	B	100	71	pg/g	20	☼	8290	Total/NA
2,3,4,6,7,8-HxCDF	1900	B	100	79	pg/g	20	☼	8290	Total/NA
1,2,3,4,6,7,8-HpCDD	2400	B	100	16	pg/g	20	☼	8290	Total/NA
1,2,3,4,6,7,8-HpCDF	7600	B	100	98	pg/g	20	☼	8290	Total/NA
1,2,3,4,7,8,9-HpCDF	220	G	120	120	pg/g	20	☼	8290	Total/NA
OCDD	5600	B	210	19	pg/g	20	☼	8290	Total/NA
OCDF	1700	B	210	5.7	pg/g	20	☼	8290	Total/NA
Total TCDD	4400	q B	21	11	pg/g	20	☼	8290	Total/NA
Total TCDF	38000	G	110	110	pg/g	20	☼	8290	Total/NA
Total PeCDD	5000	q	100	52	pg/g	20	☼	8290	Total/NA
Total PeCDF	24000	q	100	50	pg/g	20	☼	8290	Total/NA
Total HxCDD	5700		100	9.1	pg/g	20	☼	8290	Total/NA
Total HxCDF	16000	q B	100	81	pg/g	20	☼	8290	Total/NA
Total HpCDD	4900	B	100	16	pg/g	20	☼	8290	Total/NA
Total HpCDF	8900	G B	110	110	pg/g	20	☼	8290	Total/NA
2,3,7,8-TCDF - RA	1400		21	3.2	pg/g	20	☼	8290	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Methylnaphthalene	0.25	J	0.69	0.15	mg/Kg	4	☼	8270C	Total/NA
Benzo[b]fluoranthene	0.15	J	0.69	0.14	mg/Kg	4	☼	8270C	Total/NA
Indeno[1,2,3-cd]pyrene	0.49	J	0.69	0.27	mg/Kg	4	☼	8270C	Total/NA
Naphthalene	2.7		0.69	0.14	mg/Kg	4	☼	8270C	Total/NA
DRO (C10-C28)	24		5.2	2.6	mg/Kg	1	☼	8015B	Total/NA
RRO(C29-C40)	23		5.2	2.6	mg/Kg	1	☼	8015B	Total/NA
4,4'-DDE	0.0046		0.0026	0.00078	mg/Kg	1	☼	8081A	Total/NA
4,4'-DDT	0.0045	p	0.0026	0.00078	mg/Kg	1	☼	8081A	Total/NA
Dieldrin	0.0035		0.0026	0.00078	mg/Kg	1	☼	8081A	Total/NA
Endrin	0.00086	J p	0.0026	0.00078	mg/Kg	1	☼	8081A	Total/NA
Endrin aldehyde	0.0035	p	0.0026	0.00078	mg/Kg	1	☼	8081A	Total/NA
Aroclor 1260	0.094	p	0.026	0.0089	mg/Kg	1	☼	8082	Total/NA
Arsenic	43		6.2		mg/Kg	10	☼	6010B	Total/NA
Barium	940		1.0		mg/Kg	10	☼	6010B	Total/NA
Cadmium	26		2.1		mg/Kg	10	☼	6010B	Total/NA
Chromium	210		2.7		mg/Kg	10	☼	6010B	Total/NA
Lead	5300		3.1		mg/Kg	10	☼	6010B	Total/NA
Silver	14		5.2		mg/Kg	10	☼	6010B	Total/NA
Mercury	1.1		0.020		mg/Kg	10	☼	7471A	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Client Sample ID: RHS-01
Date Collected: 12/20/13 15:00
Date Received: 12/23/13 13:10

Lab Sample ID: HWL0089-01
Matrix: Solid/Soil
Percent Solids: 95.1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
1,2-Dichlorobenzene	ND		0.69	0.13	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
1,3-Dichlorobenzene	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
1,4-Dichlorobenzene	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
1-Methylnaphthalene	ND		0.73	0.31	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2,4,5-Trichlorophenol	ND		0.69	0.27	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2,4,6-Trichlorophenol	ND		0.69	0.16	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2,4-Dichlorophenol	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2,4-Dimethylphenol	ND		0.69	0.27	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2,4-Dinitrophenol	ND		1.4	0.69	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2,4-Dinitrotoluene	ND	*	0.69	0.17	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2,6-Dinitrotoluene	ND		0.69	0.20	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2-Chloronaphthalene	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2-Chlorophenol	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2-Methylnaphthalene	**0.25**	**J**	0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2-Methylphenol	ND		0.69	0.17	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2-Nitroaniline	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
2-Nitrophenol	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
3,3'-Dichlorobenzidine	ND		1.7	0.31	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
3-Methylphenol + 4-Methylphenol	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
3-Nitroaniline	ND	*	0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
4,6-Dinitro-2-methylphenol	ND		0.88	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
4-Bromophenyl phenyl ether	ND		0.69	0.16	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
4-Chloro-3-methylphenol	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
4-Chloroaniline	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
4-Chlorophenyl phenyl ether	ND		0.69	0.18	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
4-Nitroaniline	ND	*	1.7	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
4-Nitrophenol	ND	*	1.7	0.29	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Acenaphthene	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Acenaphthylene	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Anthracene	ND		0.69	0.17	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Benzo[a]anthracene	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Benzo[a]pyrene	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Benzo[b]fluoranthene	**0.15**	**J**	0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Benzo[g,h,i]perylene	ND		0.69	0.23	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Benzo[k]fluoranthene	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Benzoic acid	ND		1.7	0.31	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Benzyl alcohol	ND		0.69	0.42	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
bis (2-chloroisopropyl) ether	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Bis(2-chloroethoxy)methane	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Bis(2-chloroethyl)ether	ND		0.69	0.13	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Bis(2-ethylhexyl) phthalate	ND		0.69	0.19	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Butyl benzyl phthalate	ND		0.69	0.17	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Carbazole	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Chrysene	ND		0.69	0.16	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Dibenz(a,h)anthracene	ND		0.88	0.21	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Dibenzofuran	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Diethyl phthalate	ND	*	0.69	0.20	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Dimethyl phthalate	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Client Sample ID: RHS-01
Date Collected: 12/20/13 15:00
Date Received: 12/23/13 13:10

Lab Sample ID: HWL0089-01
Matrix: Solid/Soil
Percent Solids: 95.1

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	ND		0.69	0.19	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Di-n-octyl phthalate	ND		0.69	0.19	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Fluoranthene	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Fluorene	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Hexachlorobenzene	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Hexachlorobutadiene	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Hexachlorocyclopentadiene	ND		1.7	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Hexachloroethane	ND		0.69	0.28	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Indeno[1,2,3-cd]pyrene	**0.49**	**J**	0.69	0.27	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Isophorone	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Naphthalene	**2.7**		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Nitrobenzene	ND		0.69	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
N-Nitrosodi-n-propylamine	ND		0.52	0.15	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
N-Nitrosodiphenylamine	ND		0.69	0.17	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Pentachlorophenol	ND		1.7	0.31	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Phenanthrene	ND		0.69	0.14	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Phenol	ND		0.69	0.19	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4
Pyrene	ND		0.69	0.17	mg/Kg	☼	12/30/13 11:44	01/02/14 16:39	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*40*		*35 - 125*	*12/30/13 11:44*	*01/02/14 16:39*	*4*
2-Fluorophenol (Surr)	*41*		*25 - 120*	*12/30/13 11:44*	*01/02/14 16:39*	*4*
Nitrobenzene-d5 (Surr)	*52*		*30 - 120*	*12/30/13 11:44*	*01/02/14 16:39*	*4*
Phenol-d6 (Surr)	*45*		*35 - 120*	*12/30/13 11:44*	*01/02/14 16:39*	*4*
Terphenyl-d14 (Surr)	*79*		*40 - 135*	*12/30/13 11:44*	*01/02/14 16:39*	*4*
2-Fluorobiphenyl	*69*		*35 - 120*	*12/30/13 11:44*	*01/02/14 16:39*	*4*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	**24**		5.2	2.6	mg/Kg	☼	12/28/13 07:03	12/30/13 08:36	1
RRO(C29-C40)	**23**		5.2	2.6	mg/Kg	☼	12/28/13 07:03	12/30/13 08:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane	*63*		*40 - 140*	*12/28/13 07:03*	*12/30/13 08:36*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
4,4'-DDE	**0.0046**		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
4,4'-DDT	**0.0045**	**p**	0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Aldrin	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
alpha-BHC	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
beta-BHC	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Chlordane (technical)	ND		0.026	0.0052	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
delta-BHC	ND		0.0052	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Dieldrin	**0.0035**		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Endosulfan I	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Endosulfan II	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Endosulfan sulfate	ND		0.0052	0.0010	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Endrin	**0.00086**	**J p**	0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Client Sample ID: RHS-01
Date Collected: 12/20/13 15:00
Date Received: 12/23/13 13:10

Lab Sample ID: HWL0089-01
Matrix: Solid/Soil
Percent Solids: 95.1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endrin aldehyde	**0.0035**	**p**	0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Endrin ketone	ND		0.0026	0.0010	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
gamma-BHC (Lindane)	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Heptachlor	ND		0.0026	0.0010	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Heptachlor epoxide	ND		0.0026	0.0010	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Methoxychlor	ND		0.0026	0.00078	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1
Toxaphene	ND		0.10	0.026	mg/Kg	☼	12/27/13 17:32	12/31/13 14:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*67*		*35 - 115*	*12/27/13 17:32*	*12/31/13 14:53*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*45 - 120*	*12/27/13 17:32*	*12/31/13 14:53*	*1*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.026	0.0089	mg/Kg	☼	12/30/13 11:45	12/30/13 20:23	1
Aroclor 1221	ND		0.026	0.0089	mg/Kg	☼	12/30/13 11:45	12/30/13 20:23	1
Aroclor 1232	ND		0.026	0.0089	mg/Kg	☼	12/30/13 11:45	12/30/13 20:23	1
Aroclor 1242	ND		0.026	0.0089	mg/Kg	☼	12/30/13 11:45	12/30/13 20:23	1
Aroclor 1248	ND		0.026	0.0089	mg/Kg	☼	12/30/13 11:45	12/30/13 20:23	1
Aroclor 1254	ND		0.026	0.0089	mg/Kg	☼	12/30/13 11:45	12/30/13 20:23	1
Aroclor 1260	**0.094**	**p**	0.026	0.0089	mg/Kg	☼	12/30/13 11:45	12/30/13 20:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*78*		*45 - 120*	*12/30/13 11:45*	*12/30/13 20:23*	*1*

Method: 8290 - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**88**		21	11	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,7,8-PeCDD	**340**		100	52	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,7,8-PeCDF	**1100**		100	49	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
2,3,4,7,8-PeCDF	**2300**		100	52	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,4,7,8-HxCDD	**250**		100	11	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,6,7,8-HxCDD	**420**		100	8.5	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,7,8,9-HxCDD	**320**		100	8.2	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,4,7,8-HxCDF	**1900**	**B**	100	85	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,6,7,8-HxCDF	**1400**	**B**	100	71	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
2,3,4,6,7,8-HxCDF	**1900**	**B**	100	79	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,7,8,9-HxCDF	ND		100	89	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,4,6,7,8-HpCDD	**2400**	**B**	100	16	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,4,6,7,8-HpCDF	**7600**	**B**	100	98	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
1,2,3,4,7,8,9-HpCDF	**220**	**G**	120	120	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
OCDD	**5600**	**B**	210	19	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
OCDF	**1700**	**B**	210	5.7	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
Total TCDD	**4400**	**q B**	21	11	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
Total TCDF	**38000**	**G**	110	110	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
Total PeCDD	**5000**	**q**	100	52	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
Total PeCDF	**24000**	**q**	100	50	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
Total HxCDD	**5700**		100	9.1	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
Total HxCDF	**16000**	**q B**	100	81	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20
Total HpCDD	**4900**	**B**	100	16	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20

Client Sample Results

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Client Sample ID: RHS-01
Date Collected: 12/20/13 15:00
Date Received: 12/23/13 13:10

Lab Sample ID: HWL0089-01
Matrix: Solid/Soil
Percent Solids: 94.9

Method: 8290 - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDF	8900	G B	110	110	pg/g	☼	01/10/14 11:33	01/20/14 16:28	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*73*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-2,3,7,8-TCDF	*78*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-1,2,3,7,8-PeCDD	*80*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-1,2,3,7,8-PeCDF	*80*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-1,2,3,6,7,8-HxCDD	*62*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-1,2,3,4,7,8-HxCDF	*58*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-1,2,3,4,6,7,8-HpCDD	*49*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-1,2,3,4,6,7,8-HpCDF	*54*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*
13C-OCDD	*50*		*40 - 135*	*01/10/14 11:33*	*01/20/14 16:28*	*20*

Method: 8290 - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	1400		21	3.2	pg/g	☼	01/10/14 11:33	01/17/14 20:40	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*69*		*40 - 135*	*01/10/14 11:33*	*01/17/14 20:40*	*20*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	43		6.2		mg/Kg	☼	12/30/13 12:18	12/31/13 11:27	10
Barium	940		1.0		mg/Kg	☼	12/30/13 12:18	12/31/13 11:27	10
Cadmium	26		2.1		mg/Kg	☼	12/30/13 12:18	12/31/13 11:27	10
Chromium	210		2.7		mg/Kg	☼	12/30/13 12:18	12/31/13 11:27	10
Lead	5300		3.1		mg/Kg	☼	12/30/13 12:18	12/31/13 11:27	10
Selenium	ND		10		mg/Kg	☼	12/30/13 12:18	12/31/13 11:27	10
Silver	14		5.2		mg/Kg	☼	12/30/13 12:18	12/31/13 11:27	10

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.1		0.020		mg/Kg	☼	12/31/13 08:25	12/31/13 10:04	10

Surrogate Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	2FP	NBZ	PHL	TPH	FBP
Lab Sample ID	Client Sample ID	(35-125)	(25-120)	(30-120)	(35-120)	(40-135)	(35-120)
LCS 440-153305/2-A	Lab Control Sample	86	83	74	74	99	80
LCSD 440-153305/3-A	Lab Control Sample Dup	88	86	77	76	94	92
MB 440-153305/1-A	Method Blank	89	87	76	75	99	90

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d6 (Surr)
TPH = Terphenyl-d14 (Surr)
FBP = 2-Fluorobiphenyl

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid/Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	2FP	NBZ	PHL	TPH	FBP
Lab Sample ID	Client Sample ID	(35-125)	(25-120)	(30-120)	(35-120)	(40-135)	(35-120)
HWL0089-01	RHS-01	40	41	52	45	79	69

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d6 (Surr)
TPH = Terphenyl-d14 (Surr)
FBP = 2-Fluorobiphenyl

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		OTC1
Lab Sample ID	Client Sample ID	(40-140)
440-65826-A-1-B MS	Matrix Spike	78
440-65826-A-1-C MSD	Matrix Spike Duplicate	76
LCS 440-153196/2-A	Lab Control Sample	72
MB 440-153196/1-A	Method Blank	73

Surrogate Legend

OTC = n-Octacosane

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid/Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		OTC1
Lab Sample ID	Client Sample ID	(40-140)
HWL0089-01	RHS-01	63

Surrogate Legend

Surrogate Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

OTC = n-Octacosane

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX2	DCB2
Lab Sample ID	Client Sample ID	(35-115)	(45-120)
LCS 440-153161/2-A	Lab Control Sample	78	96
LCSD 440-153161/3-A	Lab Control Sample Dup	80	98
MB 440-153161/1-A	Method Blank	72	96

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid/Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX2	DCB2
Lab Sample ID	Client Sample ID	(35-115)	(45-120)
HWL0089-01	RHS-01	67	96

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCB1
Lab Sample ID	Client Sample ID	(45-120)
440-66257-E-2-A MS	Matrix Spike	75 p
440-66257-E-2-B MSD	Matrix Spike Duplicate	74 p
LCS 440-153161/4-A	Lab Control Sample	94
MB 440-152687/1-A	Method Blank	97

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid/Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCB1
Lab Sample ID	Client Sample ID	(45-120)
HWL0089-01	RHS-01	78

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-153305/1-A
Matrix: Solid
Analysis Batch: 153775

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153305

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
1,2-Dichlorobenzene	ND		0.33	0.060	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
1,3-Dichlorobenzene	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
1,4-Dichlorobenzene	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
1-Methylnaphthalene	ND		0.35	0.15	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2,4,5-Trichlorophenol	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2,4,6-Trichlorophenol	ND		0.33	0.075	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2,4-Dichlorophenol	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2,4-Dimethylphenol	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2,4-Dinitrophenol	ND		0.66	0.33	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2,4-Dinitrotoluene	ND		0.33	0.080	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2,6-Dinitrotoluene	ND		0.33	0.095	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2-Chloronaphthalene	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2-Chlorophenol	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2-Methylnaphthalene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2-Methylphenol	ND		0.33	0.080	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2-Nitroaniline	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
2-Nitrophenol	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
3,3'-Dichlorobenzidine	ND		0.83	0.15	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
3-Methylphenol + 4-Methylphenol	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
3-Nitroaniline	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
4,6-Dinitro-2-methylphenol	ND		0.42	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
4-Bromophenyl phenyl ether	ND		0.33	0.075	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
4-Chloro-3-methylphenol	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
4-Chloroaniline	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
4-Chlorophenyl phenyl ether	ND		0.33	0.085	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
4-Nitroaniline	ND		0.83	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
4-Nitrophenol	ND		0.83	0.14	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Acenaphthene	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Acenaphthylene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Anthracene	ND		0.33	0.080	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Benzo[a]anthracene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Benzo[a]pyrene	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Benzo[b]fluoranthene	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Benzo[g,h,i]perylene	ND		0.33	0.11	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Benzo[k]fluoranthene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Benzoic acid	ND		0.83	0.15	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Benzyl alcohol	ND		0.33	0.20	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
bis (2-chloroisopropyl) ether	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Bis(2-chloroethoxy)methane	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Bis(2-chloroethyl)ether	ND		0.33	0.060	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Bis(2-ethylhexyl) phthalate	ND		0.33	0.090	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Butyl benzyl phthalate	ND		0.33	0.080	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Carbazole	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Chrysene	ND		0.33	0.075	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Dibenz(a,h)anthracene	ND		0.42	0.10	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Dibenzofuran	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Diethyl phthalate	ND		0.33	0.095	mg/Kg		12/30/13 08:15	01/02/14 13:01	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-153305/1-A
Matrix: Solid
Analysis Batch: 153775

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153305

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dimethyl phthalate	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Di-n-butyl phthalate	ND		0.33	0.090	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Di-n-octyl phthalate	ND		0.33	0.090	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Fluoranthene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Fluorene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Hexachlorobenzene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Hexachlorobutadiene	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Hexachlorocyclopentadiene	ND		0.83	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Hexachloroethane	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Indeno[1,2,3-cd]pyrene	ND		0.33	0.13	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Isophorone	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Naphthalene	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Nitrobenzene	ND		0.33	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
N-Nitrosodi-n-propylamine	ND		0.25	0.070	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
N-Nitrosodiphenylamine	ND		0.33	0.080	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Pentachlorophenol	0.191	J	0.83	0.15	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Phenanthrene	ND		0.33	0.067	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Phenol	ND		0.33	0.090	mg/Kg		12/30/13 08:15	01/02/14 13:01	1
Pyrene	ND		0.33	0.080	mg/Kg		12/30/13 08:15	01/02/14 13:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*89*		*35 - 125*	*12/30/13 08:15*	*01/02/14 13:01*	*1*
2-Fluorophenol (Surr)	*87*		*25 - 120*	*12/30/13 08:15*	*01/02/14 13:01*	*1*
Nitrobenzene-d5 (Surr)	*76*		*30 - 120*	*12/30/13 08:15*	*01/02/14 13:01*	*1*
Phenol-d6 (Surr)	*75*		*35 - 120*	*12/30/13 08:15*	*01/02/14 13:01*	*1*
Terphenyl-d14 (Surr)	*99*		*40 - 135*	*12/30/13 08:15*	*01/02/14 13:01*	*1*
2-Fluorobiphenyl	*90*		*35 - 120*	*12/30/13 08:15*	*01/02/14 13:01*	*1*

Lab Sample ID: LCS 440-153305/2-A
Matrix: Solid
Analysis Batch: 153775

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153305

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,4-Trichlorobenzene	3.33	2.70		mg/Kg		81	40 - 120
1,2-Dichlorobenzene	3.33	2.56		mg/Kg		77	40 - 120
1,3-Dichlorobenzene	3.33	2.45		mg/Kg		74	35 - 120
1,4-Dichlorobenzene	3.33	2.53		mg/Kg		76	35 - 120
2,4,5-Trichlorophenol	3.33	3.37		mg/Kg		101	50 - 120
2,4,6-Trichlorophenol	3.33	3.26		mg/Kg		98	50 - 120
2,4-Dichlorophenol	3.33	3.20		mg/Kg		96	45 - 120
2,4-Dimethylphenol	3.33	2.82		mg/Kg		85	40 - 120
2,4-Dinitrophenol	3.33	3.23		mg/Kg		97	25 - 120
2,4-Dinitrotoluene	3.33	3.41		mg/Kg		102	55 - 125
2,6-Dinitrotoluene	3.33	3.41		mg/Kg		102	55 - 125
2-Chloronaphthalene	3.33	2.77		mg/Kg		83	45 - 120
2-Chlorophenol	3.33	2.86		mg/Kg		86	40 - 120
2-Methylnaphthalene	3.33	2.86		mg/Kg		86	45 - 120
2-Methylphenol	3.33	2.85		mg/Kg		85	40 - 120

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-153305/2-A
Matrix: Solid
Analysis Batch: 153775

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153305

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Nitroaniline	3.33	3.00		mg/Kg		90	50 - 125
2-Nitrophenol	3.33	2.99		mg/Kg		90	45 - 120
3,3'-Dichlorobenzidine	3.33	2.52		mg/Kg		76	20 - 130
3-Methylphenol + 4-Methylphenol	3.33	2.85		mg/Kg		85	50 - 120
3-Nitroaniline	3.33	2.76		mg/Kg		83	35 - 120
4,6-Dinitro-2-methylphenol	3.33	3.12		mg/Kg		94	40 - 120
4-Bromophenyl phenyl ether	3.33	3.09		mg/Kg		93	45 - 120
4-Chloro-3-methylphenol	3.33	3.15		mg/Kg		95	50 - 125
4-Chloroaniline	3.33	1.83		mg/Kg		55	20 - 120
4-Chlorophenyl phenyl ether	3.33	3.20		mg/Kg		96	55 - 120
4-Nitroaniline	3.33	3.41		mg/Kg		102	45 - 125
4-Nitrophenol	3.33	3.00		mg/Kg		90	40 - 125
Acenaphthene	3.33	2.97		mg/Kg		89	50 - 120
Acenaphthylene	3.33	3.22		mg/Kg		97	50 - 120
Anthracene	3.33	3.21		mg/Kg		96	55 - 120
Benzo[a]anthracene	3.33	3.11		mg/Kg		93	55 - 120
Benzo[a]pyrene	3.33	3.05		mg/Kg		92	50 - 125
Benzo[b]fluoranthene	3.33	2.81		mg/Kg		84	45 - 125
Benzo[g,h,i]perylene	3.33	3.40		mg/Kg		102	35 - 130
Benzo[k]fluoranthene	3.33	3.12		mg/Kg		93	45 - 125
Benzoic acid	3.33	3.07		mg/Kg		92	20 - 120
Benzyl alcohol	3.33	2.48		mg/Kg		75	35 - 120
bis (2-chloroisopropyl) ether	3.33	2.08		mg/Kg		62	40 - 120
Bis(2-chloroethoxy)methane	3.33	2.70		mg/Kg		81	45 - 120
Bis(2-chloroethyl)ether	3.33	2.54		mg/Kg		76	35 - 120
Bis(2-ethylhexyl) phthalate	3.33	3.58		mg/Kg		107	50 - 130
Butyl benzyl phthalate	3.33	3.30		mg/Kg		99	50 - 125
Chrysene	3.33	3.13		mg/Kg		94	55 - 120
Dibenz(a,h)anthracene	3.33	3.43		mg/Kg		103	40 - 135
Dibenzofuran	3.33	3.04		mg/Kg		91	55 - 120
Diethyl phthalate	3.33	3.37		mg/Kg		101	50 - 125
Dimethyl phthalate	3.33	3.24		mg/Kg		97	50 - 125
Di-n-butyl phthalate	3.33	3.41		mg/Kg		102	50 - 125
Di-n-octyl phthalate	3.33	3.55		mg/Kg		107	50 - 135
Fluoranthene	3.33	3.23		mg/Kg		97	55 - 120
Fluorene	3.33	3.21		mg/Kg		96	55 - 120
Hexachlorobenzene	3.33	2.96		mg/Kg		89	50 - 120
Hexachlorobutadiene	3.33	2.70		mg/Kg		81	40 - 120
Hexachlorocyclopentadiene	3.33	2.78		mg/Kg		83	30 - 125
Hexachloroethane	3.33	2.46		mg/Kg		74	40 - 120
Indeno[1,2,3-cd]pyrene	3.33	3.74		mg/Kg		112	30 - 135
Isophorone	3.33	2.73		mg/Kg		82	40 - 120
Naphthalene	3.33	2.68		mg/Kg		81	45 - 120
Nitrobenzene	3.33	2.55		mg/Kg		77	45 - 120
N-Nitrosodi-n-propylamine	3.33	2.28		mg/Kg		68	40 - 120
N-Nitrosodiphenylamine	3.33	2.85		mg/Kg		86	50 - 120
Pentachlorophenol	3.33	3.19		mg/Kg		96	40 - 120
Phenanthrene	3.33	3.08		mg/Kg		92	50 - 120

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-153305/2-A
Matrix: Solid
Analysis Batch: 153775

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153305

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenol	3.33	2.83		mg/Kg		85	40 - 120
Pyrene	3.33	3.33		mg/Kg		100	45 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*86*		*35 - 125*
2-Fluorophenol (Surr)	*83*		*25 - 120*
Nitrobenzene-d5 (Surr)	*74*		*30 - 120*
Phenol-d6 (Surr)	*74*		*35 - 120*
Terphenyl-d14 (Surr)	*99*		*40 - 135*
2-Fluorobiphenyl	*80*		*35 - 120*

Lab Sample ID: LCSD 440-153305/3-A
Matrix: Solid
Analysis Batch: 153775

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 153305

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene	3.33	2.73		mg/Kg		82	40 - 120	1	20
1,2-Dichlorobenzene	3.33	2.62		mg/Kg		79	40 - 120	2	20
1,3-Dichlorobenzene	3.33	2.49		mg/Kg		75	35 - 120	2	25
1,4-Dichlorobenzene	3.33	2.52		mg/Kg		75	35 - 120	1	25
2,4,5-Trichlorophenol	3.33	3.43		mg/Kg		103	50 - 120	2	20
2,4,6-Trichlorophenol	3.33	3.54		mg/Kg		106	50 - 120	8	20
2,4-Dichlorophenol	3.33	3.23		mg/Kg		97	45 - 120	1	20
2,4-Dimethylphenol	3.33	2.82		mg/Kg		84	40 - 120	0	20
2,4-Dinitrophenol	3.33	2.85		mg/Kg		85	25 - 120	13	25
2,4-Dinitrotoluene	3.33	2.62	*	mg/Kg		79	55 - 125	26	20
2,6-Dinitrotoluene	3.33	2.98		mg/Kg		89	55 - 125	14	20
2-Chloronaphthalene	3.33	3.04		mg/Kg		91	45 - 120	9	20
2-Chlorophenol	3.33	3.07		mg/Kg		92	40 - 120	7	20
2-Methylnaphthalene	3.33	2.70		mg/Kg		81	45 - 120	6	20
2-Methylphenol	3.33	3.00		mg/Kg		90	40 - 120	5	20
2-Nitroaniline	3.33	2.76		mg/Kg		83	50 - 125	8	20
2-Nitrophenol	3.33	3.26		mg/Kg		98	45 - 120	9	20
3,3'-Dichlorobenzidine	3.33	2.29		mg/Kg		69	20 - 130	10	25
3-Methylphenol + 4-Methylphenol	3.33	3.01		mg/Kg		90	50 - 120	5	20
3-Nitroaniline	3.33	2.03	*	mg/Kg		61	35 - 120	30	25
4,6-Dinitro-2-methylphenol	3.33	3.09		mg/Kg		93	40 - 120	1	25
4-Bromophenyl phenyl ether	3.33	3.33		mg/Kg		100	45 - 120	7	20
4-Chloro-3-methylphenol	3.33	2.77		mg/Kg		83	50 - 125	13	20
4-Chloroaniline	3.33	1.52		mg/Kg		46	20 - 120	19	30
4-Chlorophenyl phenyl ether	3.33	2.84		mg/Kg		85	55 - 120	12	20
4-Nitroaniline	3.33	2.41	*	mg/Kg		72	45 - 125	34	20
4-Nitrophenol	3.33	2.24	*	mg/Kg		67	40 - 125	29	20
Acenaphthene	3.33	2.89		mg/Kg		87	50 - 120	2	20
Acenaphthylene	3.33	3.21		mg/Kg		96	50 - 120	0	20
Anthracene	3.33	3.11		mg/Kg		93	55 - 120	3	20
Benzo[a]anthracene	3.33	3.04		mg/Kg		91	55 - 120	2	20
Benzo[a]pyrene	3.33	2.99		mg/Kg		90	50 - 125	2	20

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-153305/3-A
Matrix: Solid
Analysis Batch: 153775

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 153305

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[b]fluoranthene			3.33	2.74		mg/Kg		82	45 - 125	3	25
Benzo[g,h,i]perylene			3.33	3.39		mg/Kg		102	35 - 130	0	25
Benzo[k]fluoranthene			3.33	3.09		mg/Kg		93	45 - 125	1	25
Benzoic acid			3.33	3.32		mg/Kg		100	20 - 120	8	30
Benzyl alcohol			3.33	2.70		mg/Kg		81	35 - 120	8	25
bis (2-chloroisopropyl) ether			3.33	2.07		mg/Kg		62	40 - 120	0	20
Bis(2-chloroethoxy)methane			3.33	2.78		mg/Kg		84	45 - 120	3	20
Bis(2-chloroethyl)ether			3.33	2.59		mg/Kg		78	35 - 120	2	25
Bis(2-ethylhexyl) phthalate			3.33	3.56		mg/Kg		107	50 - 130	1	20
Butyl benzyl phthalate			3.33	3.20		mg/Kg		96	50 - 125	3	20
Chrysene			3.33	3.08		mg/Kg		92	55 - 120	2	20
Dibenz(a,h)anthracene			3.33	3.42		mg/Kg		103	40 - 135	0	25
Dibenzofuran			3.33	2.85		mg/Kg		85	55 - 120	7	20
Diethyl phthalate			3.33	2.72	*	mg/Kg		81	50 - 125	21	20
Dimethyl phthalate			3.33	2.92		mg/Kg		88	50 - 125	10	20
Di-n-butyl phthalate			3.33	3.12		mg/Kg		94	50 - 125	9	20
Di-n-octyl phthalate			3.33	3.52		mg/Kg		106	50 - 135	1	20
Fluoranthene			3.33	2.94		mg/Kg		88	55 - 120	9	20
Fluorene			3.33	2.74		mg/Kg		82	55 - 120	16	20
Hexachlorobenzene			3.33	3.08		mg/Kg		92	50 - 120	4	20
Hexachlorobutadiene			3.33	2.68		mg/Kg		80	40 - 120	1	20
Hexachlorocyclopentadiene			3.33	3.55		mg/Kg		106	30 - 125	24	25
Hexachloroethane			3.33	2.48		mg/Kg		74	40 - 120	1	20
Indeno[1,2,3-cd]pyrene			3.33	3.72		mg/Kg		112	30 - 135	0	25
Isophorone			3.33	2.71		mg/Kg		81	40 - 120	0	20
Naphthalene			3.33	2.71		mg/Kg		81	45 - 120	1	20
Nitrobenzene			3.33	2.62		mg/Kg		79	45 - 120	3	20
N-Nitrosodi-n-propylamine			3.33	2.43		mg/Kg		73	40 - 120	6	20
N-Nitrosodiphenylamine			3.33	3.12		mg/Kg		94	50 - 120	9	20
Pentachlorophenol			3.33	3.16		mg/Kg		95	40 - 120	1	20
Phenanthrene			3.33	3.00		mg/Kg		90	50 - 120	3	20
Phenol			3.33	3.02		mg/Kg		91	40 - 120	7	20
Pyrene			3.33	3.23		mg/Kg		97	45 - 125	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*88*		*35 - 125*
2-Fluorophenol (Surr)	*86*		*25 - 120*
Nitrobenzene-d5 (Surr)	*77*		*30 - 120*
Phenol-d6 (Surr)	*76*		*35 - 120*
Terphenyl-d14 (Surr)	*94*		*40 - 135*
2-Fluorobiphenyl	*92*		*35 - 120*

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-153196/1-A
Matrix: Solid
Analysis Batch: 153341

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153196

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	ND		5.0	2.5	mg/Kg		12/28/13 07:03	12/30/13 08:15	1
RRO(C29-C40)	ND		5.0	2.5	mg/Kg		12/28/13 07:03	12/30/13 08:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane	*73*		*40 - 140*	*12/28/13 07:03*	*12/30/13 08:15*	*1*

Lab Sample ID: LCS 440-153196/2-A
Matrix: Solid
Analysis Batch: 153341

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
DRO (C10-C28)	33.3	20.9		mg/Kg		63	45 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
n-Octacosane	*72*		*40 - 140*

Lab Sample ID: 440-65826-A-1-B MS
Matrix: Solid
Analysis Batch: 153341

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 153196

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
DRO (C10-C28)	ND		33.4	22.1		mg/Kg		66	40 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
n-Octacosane	*78*		*40 - 140*

Lab Sample ID: 440-65826-A-1-C MSD
Matrix: Solid
Analysis Batch: 153341

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 153196

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DRO (C10-C28)	ND		33.4	21.8		mg/Kg		65	40 - 120	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
n-Octacosane	*76*		*40 - 140*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 440-153161/1-A
Matrix: Solid
Analysis Batch: 153523

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153161

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
4,4'-DDE	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
4,4'-DDT	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Aldrin	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 440-153161/1-A
Matrix: Solid
Analysis Batch: 153523

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153161

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
beta-BHC	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Chlordane (technical)	ND		0.050	0.010	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
delta-BHC	ND		0.010	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Dieldrin	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Endosulfan I	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Endosulfan II	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Endosulfan sulfate	ND		0.010	0.0020	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Endrin	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Endrin aldehyde	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Endrin ketone	ND		0.0050	0.0020	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
gamma-BHC (Lindane)	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Heptachlor	ND		0.0050	0.0020	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Heptachlor epoxide	ND		0.0050	0.0020	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Methoxychlor	ND		0.0050	0.0015	mg/Kg		12/27/13 17:32	12/31/13 14:09	1
Toxaphene	ND		0.20	0.050	mg/Kg		12/27/13 17:32	12/31/13 14:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*72*		*35 - 115*	*12/27/13 17:32*	*12/31/13 14:09*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*45 - 120*	*12/27/13 17:32*	*12/31/13 14:09*	*1*

Lab Sample ID: LCS 440-153161/2-A
Matrix: Solid
Analysis Batch: 153523

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153161

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	0.0333	0.0344		mg/Kg		103	60 - 120
4,4'-DDE	0.0333	0.0318		mg/Kg		95	60 - 120
4,4'-DDT	0.0333	0.0298		mg/Kg		90	65 - 120
Aldrin	0.0333	0.0283		mg/Kg		85	50 - 115
alpha-BHC	0.0333	0.0288		mg/Kg		87	60 - 115
beta-BHC	0.0333	0.0293		mg/Kg		88	60 - 115
delta-BHC	0.0333	0.0317		mg/Kg		95	60 - 115
Dieldrin	0.0333	0.0311		mg/Kg		93	65 - 115
Endosulfan I	0.0333	0.0303		mg/Kg		91	40 - 120
Endosulfan II	0.0333	0.0318		mg/Kg		95	55 - 120
Endosulfan sulfate	0.0333	0.0332		mg/Kg		100	65 - 115
Endrin	0.0333	0.0287		mg/Kg		86	55 - 120
Endrin aldehyde	0.0333	0.0266		mg/Kg		80	55 - 115
Endrin ketone	0.0333	0.0325		mg/Kg		97	65 - 115
gamma-BHC (Lindane)	0.0333	0.0291		mg/Kg		87	55 - 115
Heptachlor	0.0333	0.0272		mg/Kg		82	55 - 115
Heptachlor epoxide	0.0333	0.0297		mg/Kg		89	55 - 115
Methoxychlor	0.0333	0.0292		mg/Kg		88	65 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*78*		*35 - 115*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 440-153161/2-A
Matrix: Solid
Analysis Batch: 153523

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153161

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	96		45 - 120

Lab Sample ID: LCSD 440-153161/3-A
Matrix: Solid
Analysis Batch: 153523

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 153161

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD			0.0333	0.0352		mg/Kg		106	60 - 120	2	30
4,4'-DDE			0.0333	0.0323		mg/Kg		97	60 - 120	2	30
4,4'-DDT			0.0333	0.0298		mg/Kg		89	65 - 120	0	30
Aldrin			0.0333	0.0287		mg/Kg		86	50 - 115	1	30
alpha-BHC			0.0333	0.0292		mg/Kg		88	60 - 115	1	30
beta-BHC			0.0333	0.0299		mg/Kg		90	60 - 115	2	30
delta-BHC			0.0333	0.0324		mg/Kg		97	60 - 115	2	30
Dieldrin			0.0333	0.0316		mg/Kg		95	65 - 115	2	30
Endosulfan I			0.0333	0.0308		mg/Kg		92	40 - 120	2	30
Endosulfan II			0.0333	0.0325		mg/Kg		98	55 - 120	2	30
Endosulfan sulfate			0.0333	0.0343		mg/Kg		103	65 - 115	3	30
Endrin			0.0333	0.0287		mg/Kg		86	55 - 120	0	30
Endrin aldehyde			0.0333	0.0277		mg/Kg		83	55 - 115	4	30
Endrin ketone			0.0333	0.0338		mg/Kg		102	65 - 115	4	30
gamma-BHC (Lindane)			0.0333	0.0295		mg/Kg		89	55 - 115	1	30
Heptachlor			0.0333	0.0274		mg/Kg		82	55 - 115	1	30
Heptachlor epoxide			0.0333	0.0300		mg/Kg		90	55 - 115	1	30
Methoxychlor			0.0333	0.0295		mg/Kg		89	65 - 120	1	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	80		35 - 115
DCB Decachlorobiphenyl (Surr)	98		45 - 120

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 440-152687/1-A
Matrix: Solid
Analysis Batch: 153427

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152687

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.050	0.017	mg/Kg		12/24/13 18:18	12/30/13 19:07	1
Aroclor 1221	ND		0.050	0.017	mg/Kg		12/24/13 18:18	12/30/13 19:07	1
Aroclor 1232	ND		0.050	0.017	mg/Kg		12/24/13 18:18	12/30/13 19:07	1
Aroclor 1242	ND		0.050	0.017	mg/Kg		12/24/13 18:18	12/30/13 19:07	1
Aroclor 1248	ND		0.050	0.017	mg/Kg		12/24/13 18:18	12/30/13 19:07	1
Aroclor 1254	ND		0.050	0.017	mg/Kg		12/24/13 18:18	12/30/13 19:07	1
Aroclor 1260	ND		0.050	0.017	mg/Kg		12/24/13 18:18	12/30/13 19:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	97		45 - 120	12/24/13 18:18	12/30/13 19:07	1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCS 440-153161/4-A
Matrix: Solid
Analysis Batch: 153427

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153161

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	0.267	0.195		mg/Kg		73	65 - 115
Aroclor 1260	0.267	0.211		mg/Kg		79	65 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*94*		*45 - 120*

Lab Sample ID: 440-66257-E-2-A MS
Matrix: Solid
Analysis Batch: 153427

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 153161

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	ND		0.264	0.190		mg/Kg		72	50 - 120
Aroclor 1260	ND		0.264	0.186		mg/Kg		70	50 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*75*	*p*	*45 - 120*

Lab Sample ID: 440-66257-E-2-B MSD
Matrix: Solid
Analysis Batch: 153427

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 153161

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor 1016	ND		0.263	0.189		mg/Kg		72	50 - 120	0	30
Aroclor 1260	ND		0.263	0.186		mg/Kg		71	50 - 125	0	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*74*	*p*	*45 - 120*

Method: 8290 - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-33622/1-A
Matrix: Solid
Analysis Batch: 33999

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33622

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.0	0.017	pg/g		01/10/14 11:33	01/15/14 00:16	1
2,3,7,8-TCDF	ND		1.0	0.014	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,7,8-PeCDD	ND		5.0	0.025	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,7,8-PeCDF	ND		5.0	0.022	pg/g		01/10/14 11:33	01/15/14 00:16	1
2,3,4,7,8-PeCDF	ND		5.0	0.023	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.017	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.039	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.012	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,4,7,8-HxCDF	0.108	J q	5.0	0.020	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,6,7,8-HxCDF	0.0417	J q	5.0	0.015	pg/g		01/10/14 11:33	01/15/14 00:16	1
2,3,4,6,7,8-HxCDF	0.0357	J q	5.0	0.017	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.019	pg/g		01/10/14 11:33	01/15/14 00:16	1

Method: 8290 - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-33622/1-A
Matrix: Solid
Analysis Batch: 33999

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33622

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.439	J	5.0	0.030	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,4,6,7,8-HpCDF	0.359	J	5.0	0.027	pg/g		01/10/14 11:33	01/15/14 00:16	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.031	pg/g		01/10/14 11:33	01/15/14 00:16	1
OCDD	6.38	J	10	0.051	pg/g		01/10/14 11:33	01/15/14 00:16	1
OCDF	0.486	J q	10	0.043	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total TCDD	0.0915	J q	1.0	0.017	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total TCDF	ND		1.0	0.014	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total PeCDD	ND		5.0	0.025	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total PeCDF	ND		5.0	0.023	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total HxCDD	ND		5.0	0.039	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total HxCDF	0.186	J q	5.0	0.018	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total HpCDD	0.883	J	5.0	0.030	pg/g		01/10/14 11:33	01/15/14 00:16	1
Total HpCDF	0.492	J q	5.0	0.029	pg/g		01/10/14 11:33	01/15/14 00:16	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*65*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-2,3,7,8-TCDF	*56*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-1,2,3,4,7,8-HxCDF	*55*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*78*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*69*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*
13C-OCDD	*73*		*40 - 135*	*01/10/14 11:33*	*01/15/14 00:16*	*1*

Lab Sample ID: LCS 320-33622/2-A
Matrix: Solid
Analysis Batch: 33999

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33622

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	20.0	17.9		pg/g		89	60 - 138
2,3,7,8-TCDF	20.0	18.8		pg/g		94	56 - 158
1,2,3,7,8-PeCDD	100	101		pg/g		101	70 - 122
1,2,3,7,8-PeCDF	100	95.0		pg/g		95	69 - 134
2,3,4,7,8-PeCDF	100	94.5		pg/g		95	70 - 131
1,2,3,4,7,8-HxCDD	100	95.8		pg/g		96	60 - 138
1,2,3,6,7,8-HxCDD	100	102		pg/g		102	68 - 136
1,2,3,7,8,9-HxCDD	100	101		pg/g		101	68 - 138
1,2,3,4,7,8-HxCDF	100	99.6		pg/g		100	74 - 128
1,2,3,6,7,8-HxCDF	100	105		pg/g		105	67 - 140
2,3,4,6,7,8-HxCDF	100	109		pg/g		109	71 - 137
1,2,3,7,8,9-HxCDF	100	106		pg/g		106	72 - 134
1,2,3,4,6,7,8-HpCDD	100	104		pg/g		104	71 - 128
1,2,3,4,6,7,8-HpCDF	100	98.0		pg/g		98	71 - 134
1,2,3,4,7,8,9-HpCDF	100	98.6		pg/g		99	68 - 129
OCDD	200	204		pg/g		102	70 - 128
OCDF	200	201		pg/g		100	63 - 141

Method: 8290 - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-33622/2-A
Matrix: Solid
Analysis Batch: 33999

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33622

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	51		40 - 135
13C-2,3,7,8-TCDF	41		40 - 135
13C-1,2,3,7,8-PeCDD	52		40 - 135
13C-1,2,3,7,8-PeCDF	48		40 - 135
13C-1,2,3,6,7,8-HxCDD	52		40 - 135
13C-1,2,3,4,7,8-HxCDF	45		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	62		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	56		40 - 135
13C-OCDD	58		40 - 135

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 580-151433/18-A
Matrix: Solid
Analysis Batch: 151504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 151433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		12/30/13 12:18	12/31/13 11:13	1
Barium	ND		0.50		mg/Kg		12/30/13 12:18	12/31/13 11:13	1
Cadmium	ND		1.0		mg/Kg		12/30/13 12:18	12/31/13 11:13	1
Chromium	ND		1.3		mg/Kg		12/30/13 12:18	12/31/13 11:13	1
Lead	ND		1.5		mg/Kg		12/30/13 12:18	12/31/13 11:13	1
Selenium	ND		5.0		mg/Kg		12/30/13 12:18	12/31/13 11:13	1
Silver	ND		2.5		mg/Kg		12/30/13 12:18	12/31/13 11:13	1

Lab Sample ID: LCS 580-151433/19-A
Matrix: Solid
Analysis Batch: 151504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 151433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	197		mg/Kg		99	80 - 120
Barium	200	212		mg/Kg		106	80 - 120
Cadmium	5.00	5.15		mg/Kg		103	80 - 120
Chromium	20.0	21.2		mg/Kg		106	80 - 120
Lead	50.0	48.2		mg/Kg		96	80 - 120
Selenium	200	200		mg/Kg		100	80 - 120
Silver	30.0	29.7		mg/Kg		99	75 - 120

Lab Sample ID: LCSD 580-151433/20-A
Matrix: Solid
Analysis Batch: 151504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 151433

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	196		mg/Kg		98	80 - 120	1	20
Barium	200	208		mg/Kg		104	80 - 120	2	20
Cadmium	5.00	5.00		mg/Kg		100	80 - 120	3	20
Chromium	20.0	20.8		mg/Kg		104	80 - 120	2	20
Lead	50.0	47.4		mg/Kg		95	80 - 120	2	20
Selenium	200	198		mg/Kg		99	80 - 120	1	20

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCSD 580-151433/20-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 151504 — **Prep Batch: 151433**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver			30.0	29.6		mg/Kg		99	75 - 120	1	20

Lab Sample ID: 580-41776-1 MS — **Client Sample ID: HWL0089-01**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 151504 — **Prep Batch: 151433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	43		41.9	82.2		mg/Kg	☼	93	80 - 120		
Barium	940		41.9	917	4	mg/Kg	☼	-55	80 - 120		
Cadmium	26		1.05	31.1	4	mg/Kg	☼	449	80 - 120		
Chromium	210		4.19	257	4	mg/Kg	☼	1047	80 - 120		
Lead	5300		10.5	4440	4	mg/Kg	☼	-7804	80 - 120		
Selenium	ND		41.9	19.7	F1	mg/Kg	☼	47	80 - 120		
Silver	14		6.29	20.1		mg/Kg	☼	102	75 - 120		

Lab Sample ID: 580-41776-1 MSD — **Client Sample ID: HWL0089-01**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 151504 — **Prep Batch: 151433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	43		41.0	84.9		mg/Kg	☼	101	80 - 120	3	20
Barium	940		41.0	943	4	mg/Kg	☼	7	80 - 120	3	20
Cadmium	26		1.02	29.4	4	mg/Kg	☼	297	80 - 120	6	20
Chromium	210		4.10	265	4	mg/Kg	☼	1267	80 - 120	3	20
Lead	5300		10.2	6980	4 F2	mg/Kg	☼	16766	80 - 120	44	20
Selenium	ND		41.0	20.1	F1	mg/Kg	☼	49	80 - 120	2	20
Silver	14		6.15	21.4	F1	mg/Kg	☼	127	75 - 120	7	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 580-151436/8-A ^10 — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 151495 — **Prep Batch: 151436**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020		mg/Kg		12/31/13 08:25	12/31/13 09:57	10

Lab Sample ID: LCS 580-151436/9-A ^10 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 151495 — **Prep Batch: 151436**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.100	0.0994		mg/Kg		99	80 - 120		

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCSD 580-151436/10-A ^10
Matrix: Solid
Analysis Batch: 151495

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 151436

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.100	0.0993		mg/Kg		99	80 - 120	0	20

Lab Sample ID: 580-41776-1 MS
Matrix: Solid
Analysis Batch: 151495

Client Sample ID: HWL0089-01
Prep Type: Total/NA
Prep Batch: 151436

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	1.1		0.100	1.35	4	mg/Kg	☼	277	80 - 120		

Lab Sample ID: 580-41776-1 MSD
Matrix: Solid
Analysis Batch: 151495

Client Sample ID: HWL0089-01
Prep Type: Total/NA
Prep Batch: 151436

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	1.1		0.103	1.44	4	mg/Kg	☼	354	80 - 120	6	20

QC Association Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

GC/MS Semi VOA

Prep Batch: 153305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01	RHS-01	Total/NA	Solid/Soil	3546	
LCS 440-153305/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 440-153305/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
MB 440-153305/1-A	Method Blank	Total/NA	Solid	3546	

Analysis Batch: 153775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01	RHS-01	Total/NA	Solid/Soil	8270C	153305
LCS 440-153305/2-A	Lab Control Sample	Total/NA	Solid	8270C	153305
LCSD 440-153305/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C	153305
MB 440-153305/1-A	Method Blank	Total/NA	Solid	8270C	153305

GC Semi VOA

Prep Batch: 152687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-152687/1-A	Method Blank	Total/NA	Solid	3546	

Prep Batch: 153161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66257-E-2-A MS	Matrix Spike	Total/NA	Solid	3546	
440-66257-E-2-B MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	3546	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	3546	
LCS 440-153161/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCS 440-153161/4-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 440-153161/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
MB 440-153161/1-A	Method Blank	Total/NA	Solid	3546	

Prep Batch: 153196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-65826-A-1-B MS	Matrix Spike	Total/NA	Solid	CA LUFT	
440-65826-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	CA LUFT	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	CA LUFT	
LCS 440-153196/2-A	Lab Control Sample	Total/NA	Solid	CA LUFT	
MB 440-153196/1-A	Method Blank	Total/NA	Solid	CA LUFT	

Analysis Batch: 153341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-65826-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B	153196
440-65826-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	153196
LCS 440-153196/2-A	Lab Control Sample	Total/NA	Solid	8015B	153196
MB 440-153196/1-A	Method Blank	Total/NA	Solid	8015B	153196

Analysis Batch: 153342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01	RHS-01	Total/NA	Solid/Soil	8015B	153196

GC Semi VOA (Continued)

Analysis Batch: 153427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66257-E-2-A MS	Matrix Spike	Total/NA	Solid	8082	153161
440-66257-E-2-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8082	153161
HWL0089-01	RHS-01	Total/NA	Solid/Soil	8082	153161
LCS 440-153161/4-A	Lab Control Sample	Total/NA	Solid	8082	153161
MB 440-152687/1-A	Method Blank	Total/NA	Solid	8082	152687

Analysis Batch: 153523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01	RHS-01	Total/NA	Solid/Soil	8081A	153161
LCS 440-153161/2-A	Lab Control Sample	Total/NA	Solid	8081A	153161
LCSD 440-153161/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	153161
MB 440-153161/1-A	Method Blank	Total/NA	Solid	8081A	153161

Specialty Organics

Prep Batch: 33622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01 - RA	RHS-01	Total/NA	Solid/Soil	8290	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	8290	
LCS 320-33622/2-A	Lab Control Sample	Total/NA	Solid	8290	
MB 320-33622/1-A	Method Blank	Total/NA	Solid	8290	

Analysis Batch: 33999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-33622/2-A	Lab Control Sample	Total/NA	Solid	8290	33622
MB 320-33622/1-A	Method Blank	Total/NA	Solid	8290	33622

Analysis Batch: 34213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01 - RA	RHS-01	Total/NA	Solid/Soil	8290	33622

Analysis Batch: 34312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01	RHS-01	Total/NA	Solid/Soil	8290	33622

Metals

Prep Batch: 151433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-41776-1 MS	HWL0089-01	Total/NA	Solid	3050B	
580-41776-1 MSD	HWL0089-01	Total/NA	Solid	3050B	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	3050B	
LCS 580-151433/19-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 580-151433/20-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
MB 580-151433/18-A	Method Blank	Total/NA	Solid	3050B	

Prep Batch: 151436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-41776-1 MS	HWL0089-01	Total/NA	Solid	7471A	
580-41776-1 MSD	HWL0089-01	Total/NA	Solid	7471A	

QC Association Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Metals (Continued)

Prep Batch: 151436 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWL0089-01	RHS-01	Total/NA	Solid/Soil	7471A	
LCS 580-151436/9-A ^10	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 580-151436/10-A ^10	Lab Control Sample Dup	Total/NA	Solid	7471A	
MB 580-151436/8-A ^10	Method Blank	Total/NA	Solid	7471A	

Analysis Batch: 151495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-41776-1 MS	HWL0089-01	Total/NA	Solid	7471A	151436
580-41776-1 MSD	HWL0089-01	Total/NA	Solid	7471A	151436
HWL0089-01	RHS-01	Total/NA	Solid/Soil	7471A	151436
LCS 580-151436/9-A ^10	Lab Control Sample	Total/NA	Solid	7471A	151436
LCSD 580-151436/10-A ^10	Lab Control Sample Dup	Total/NA	Solid	7471A	151436
MB 580-151436/8-A ^10	Method Blank	Total/NA	Solid	7471A	151436

Analysis Batch: 151504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-41776-1 MS	HWL0089-01	Total/NA	Solid	6010B	151433
580-41776-1 MSD	HWL0089-01	Total/NA	Solid	6010B	151433
HWL0089-01	RHS-01	Total/NA	Solid/Soil	6010B	151433
LCS 580-151433/19-A	Lab Control Sample	Total/NA	Solid	6010B	151433
LCSD 580-151433/20-A	Lab Control Sample Dup	Total/NA	Solid	6010B	151433
MB 580-151433/18-A	Method Blank	Total/NA	Solid	6010B	151433

General Chemistry

Analysis Batch: 34148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-5681-A-1 DU	Duplicate	Total/NA	Solid	D 2216	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	D 2216	

Analysis Batch: 152388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-41946-A-1 DU	Duplicate	Total/NA	Solid	D 2216	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	D 2216	

Analysis Batch: 156504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-67522-A-20 DU	Duplicate	Total/NA	Solid	Moisture	
HWL0089-01	RHS-01	Total/NA	Solid/Soil	Moisture	

Lab Chronicle

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Client Sample ID: RHS-01
Date Collected: 12/20/13 15:00
Date Received: 12/23/13 13:10

Lab Sample ID: HWL0089-01
Matrix: Solid/Soil
Percent Solids: 95.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			153305	12/30/13 11:44	HN	TAL IRV
Total/NA	Analysis	8270C		4	153775	01/02/14 16:39	DF	TAL IRV
Total/NA	Prep	CA LUFT			153196	12/28/13 07:03	HN	TAL IRV
Total/NA	Analysis	8015B		1	153342	12/30/13 08:36	KW	TAL IRV
Total/NA	Prep	3546			153161	12/30/13 11:45	QCT	TAL IRV
Total/NA	Analysis	8082		1	153427	12/30/13 20:23	JM	TAL IRV
Total/NA	Analysis	8081A		1	153523	12/31/13 14:53	KS	TAL IRV
Total/NA	Prep	3546			153161	12/27/13 17:32	QCT	TAL IRV
Total/NA	Prep	8290	RA		33622	01/10/14 11:33	TGL	TAL SAC
Total/NA	Analysis	8290	RA	20	34213	01/17/14 20:40	JRB	TAL SAC
Total/NA	Prep	8290			33622	01/10/14 11:33	TGL	TAL SAC
Total/NA	Analysis	8290		20	34312	01/20/14 16:28	JRB	TAL SAC
Total/NA	Prep	7471A			151436	12/31/13 08:25	PAB	TAL SEA
Total/NA	Analysis	7471A		10	151495	12/31/13 10:04	FCW	TAL SEA
Total/NA	Prep	3050B			151433	12/30/13 12:18	PAB	TAL SEA
Total/NA	Analysis	6010B		10	151504	12/31/13 11:27	HJM	TAL SEA
Total/NA	Analysis	D 2216		1	34148	01/17/14 13:30	CV1	TAL SAC
Total/NA	Analysis	Moisture		1	156504	01/16/14 13:00	SP	TAL IRV
Total/NA	Analysis	D 2216		1	152388	01/21/14 10:47	RMB	TAL SEA

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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

Certification Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-14
Arizona	State Program	9	AZ0671	10-13-14
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	NELAP	9	1108CA	01-31-14
California	State Program	9	2706	06-30-14
Guam	State Program	9	Cert. No. 12.002r	01-23-14 *
Hawaii	State Program	9	N/A	01-31-14
Nevada	State Program	9	CA015312007A	07-31-14
New Mexico	State Program	6	N/A	01-31-14
Northern Mariana Islands	State Program	9	MP0002	01-31-14
Oregon	NELAP	10	4005	09-12-14
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	A2LA		NE-OS-22-13	01-31-14
A2LA	DoD ELAP		2928-01	03-31-14
Alaska (UST)	State Program	10	UST-055	02-03-14 *
Arizona	State Program	9	AZ0708	08-11-14
Arkansas DEQ	State Program	6	88-0691	06-17-14
California	NELAP	9	1119CA	01-31-14
Colorado	State Program	8	N/A	08-31-14
Connecticut	State Program	1	PH-0691	06-30-15
Florida	NELAP	4	E87570	06-30-14
Guam	State Program	9	N/A	08-31-14
Hawaii	State Program	9	N/A	01-31-14
Illinois	NELAP	5	200060	03-17-15
Kansas	NELAP	7	E-10375	10-31-14
Louisiana	NELAP	6	30612	06-30-14
Michigan	State Program	5	9947	01-31-14
Nebraska	State Program	7	NE-OS-22-13	01-31-14
Nevada	State Program	9	CA44	07-31-14
New Jersey	NELAP	2	CA005	06-30-14
New York	NELAP	2	11666	03-31-14
Northern Mariana Islands	State Program	9	MP0007	02-01-14
Oregon	NELAP	10	CA200005	03-28-14
Pennsylvania	NELAP	3	68-01272	03-31-14
South Carolina	State Program	4	87014	06-30-14
Texas	NELAP	6	T104704399-08-TX	05-31-14
US Fish & Wildlife	Federal		LE148388-0	12-31-14

* Expired certification is currently pending renewal and is considered valid.

Certification Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Laboratory: TestAmerica Sacramento (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-11-00436	12-30-14
USEPA UCMR	Federal	1	CA00044	11-06-14
Utah	NELAP	8	QUAN1	01-31-14
Washington	State Program	10	C581	05-05-14
West Virginia DHHR	State Program	3	9930C	02-03-14 *
Wyoming	State Program	8	8TMS-Q	01-31-14

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-14
California	NELAP	9	01115CA	01-31-14
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-14
USDA	Federal		P330-11-00222	05-20-14
Washington	State Program	10	C553	02-17-14

* Expired certification is currently pending renewal and is considered valid.

Method Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Method	Method Description	Protocol	Laboratory
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV
8081A	Organochlorine Pesticides (GC)	SW846	TAL IRV
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL IRV
8290	Dioxins and Furans (HRGC/HRMS)	SW846	TAL SAC
6010B	Metals (ICP)	SW846	TAL SEA
7471A	Mercury (CVAA)	SW846	TAL SEA
D 2216	Percent Moisture	ASTM	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SEA
Moisture	Percent Moisture	EPA	TAL IRV

Protocol References:

ASTM = ASTM International

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 IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Honolulu
1946 Young Street, Suite 400A • Honolulu, HI 96826
808-486-LABS (5227) • Fax 808-486-2456

LABORATORY USE ONLY
LAB JOB NO. HWL0089
☐ DOD QSM Required?
☐ Report to MDL with J Flag values?

Chain of Custody / Analysis Request Form

Report to: Ken Gomes	**Project identification**
Company name: Bureau Veritas	Job name: Radford HS
Address: 841 Bishop Street	Job number: 17012-012148.00
City: Honolulu State: HI ZIP: 96813	PO number: 17012-012148.00
Phone: 543-6122 Fax: 537-4084	Contact email address: kenney.gomes@us.bureauveritas.com Date results needed: Standard
Sampler: KG # samples in shipment: 1	

Indicate analyses requested: (A) TPH-g/d/o, method 8015M; (B) SVOCs, method 8270C; (C) Total 8 RCRA Metals, method 6010/7471; (D) PCBs, method 8082; (E) Organochlorine Pesticides, method 8081A; (F) Dioxins-Furans method 8290

Item no.	Client sample ID	Multi Incremental	Composite	Grab	Water	Soil	Wastewater	Drinking water	Sludge	Liquid	Solid	Oil	Other	Preservation method	Sampling Date	Sampling Time	No. of containers	A	B	C	D	E	F				Laboratory ID no.
1	RHS-01	X				X								ICE	12/20/13	1500	1	X	X	X	X	X	X				HWL0089-01
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Released by (print / sign)	Date / time released	Delivery method	Received by (print / sign)	Company / Agency affiliation	Date / time received	Condition noted
Ken Gomes / [signature]	12/23/13 / 1230	Hand	Nicole Okeine / [signature]	Bureau Veritas	12/23/13 / 1230	good
Nicole Okeine / [signature]	12/23/13 / 1310	Hand	[signature]	TA HNL	12/23/13 / 1310	Butter Wet 2.2

Comments:
→ MI sample, ok to dry sieve.
→ Report Analytical Results On dry weight basis

Please check one:
☐ Dispose by lab
☐ Return to client
☐ Archive (fee may apply)

COC REV 11/2012 Distribution: White - TestAmerica Yellow - Client

Page 1 of 1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: Burns Ucrtas Date/ Time Received: 12/23/13 1310

Received By: JC

Matrices: Soil Carrier: Client Airbill# :

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Chain of Custody present?	Yes ☑	No ☐	
Chain of Custody Signed when relinquished and received?	Yes ☑	No ☐	
Chain of Custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sample containers on ice?	Yes ☑	No ☐	Type: Wet
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA Vials have Zero Headspace?	Yes ☐	No ☐	No VOA vials present: ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Checked: ☑
pH Adjusted?	Yes ☐	No ☑	Final pH:
Encores / MI-VOC / 5035 Vials Present?	Yes ☐	No ☑	Location:
Sample Filtration Needed?	Yes ☐	No ☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes ☐	No ☑	Take Action: ☐
DODQSM / QAPP Project?	Yes ☐	No ☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: 2 °C

Comments/ Sampling Handling Notes:

Toxicity Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Client Sample ID: RHS-01 — Lab Sample ID: HWL0089-01

Analyte	Result	Qualifier	NONE	NONE	Unit	WHO 2005 ND = 0 TEF	TEQ	Method
Total Dioxin/Furan TEQ					pg/g		2000	TEQ

Analyte	Result	Qualifier	RL	EDL	Unit	WHO 2005 ND = 0 TEF	TEQ	Method
2,3,7,8-TCDD	**88**		21	11	pg/g	1	**88**	8290
1,2,3,7,8-PeCDD	**340**		100	52	pg/g	1	**340**	8290
1,2,3,7,8-PeCDF	**1100**		100	49	pg/g	0.03	**33**	8290
2,3,4,7,8-PeCDF	**2300**		100	52	pg/g	0.3	**690**	8290
1,2,3,4,7,8-HxCDD	**250**		100	11	pg/g	0.1	**25**	8290
1,2,3,6,7,8-HxCDD	**420**		100	8.5	pg/g	0.1	**42**	8290
1,2,3,7,8,9-HxCDD	**320**		100	8.2	pg/g	0.1	**32**	8290
1,2,3,4,7,8-HxCDF	**1900**	**B**	100	85	pg/g	0.1	**190**	8290
1,2,3,6,7,8-HxCDF	**1400**	**B**	100	71	pg/g	0.1	**140**	8290
2,3,4,6,7,8-HxCDF	**1900**	**B**	100	79	pg/g	0.1	**190**	8290
1,2,3,7,8,9-HxCDF	ND		100	89	pg/g	0.1	0.00	8290
1,2,3,4,6,7,8-HpCDD	**2400**	**B**	100	16	pg/g	0.01	**24**	8290
1,2,3,4,6,7,8-HpCDF	**7600**	**B**	100	98	pg/g	0.01	**76**	8290
1,2,3,4,7,8,9-HpCDF	**220**	**G**	120	120	pg/g	0.01	**2.2**	8290
OCDD	**5600**	**B**	210	19	pg/g	0.0003	**1.7**	8290
OCDF	**1700**	**B**	210	5.7	pg/g	0.0003	**0.51**	8290
2,3,7,8-TCDF - RA	**1400**		21	3.2	pg/g	0.1	**140**	8290

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Isotope Dilution Summary

Client: Bureau Veritas
Project/Site: 17012-012148.00

TestAmerica Job ID: HWL0089

Method: 8290 - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		TCDD	TCDF	PeCDD	PeCDF1	HxCDD2	HxCDF1	HpCDD	HpCDF1
Lab Sample ID	Client Sample ID	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)
LCS 320-33622/2-A	Lab Control Sample	51	41	52	48	52	45	62	56
MB 320-33622/1-A	Method Blank	65	56	66	62	67	55	78	69

		Percent Isotope Dilution Recovery (Acceptance Limits)
		OCDD
Lab Sample ID	Client Sample ID	(40-135)
LCS 320-33622/2-A	Lab Control Sample	58
MB 320-33622/1-A	Method Blank	73

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF1 = 13C-1,2,3,7,8-PeCDF
HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
OCDD = 13C-OCDD

Method: 8290 - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid/Soil **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		TCDD	TCDF	PeCDD	PeCDF1	HxCDD2	HxCDF1	HpCDD	HpCDF1
Lab Sample ID	Client Sample ID	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)	(40-135)
HWL0089-01 - RA	RHS-01		69						
HWL0089-01	RHS-01	73	78	80	80	62	58	49	54

		Percent Isotope Dilution Recovery (Acceptance Limits)
		OCDD
Lab Sample ID	Client Sample ID	(40-135)
HWL0089-01 - RA	RHS-01	
HWL0089-01	RHS-01	50

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF1 = 13C-1,2,3,7,8-PeCDF
HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
OCDD = 13C-OCDD

APPENDIX B

LABORATORY ANALYTICAL REPORTS
AND
CHAIN OF CUSTODY FORMS (NVL)

December 27, 2013

NVL LABS
INDUSTRIAL HYGIENE SERVICES
Laboratory | Management | Training

Kenney Gomes
Bureau Veritas North America, Inc.-Hawaii
841 Bishop Street, Suite 1100
Honolulu, HI 96813

RE: Bulk Asbestos Fiber Analysis, NVL Batch # 1321182.00

Dear Mr. Gomes,

Enclosed please find test results for the bulk samples submitted to our laboratory for analysis. Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with both U.S. EPA 600/M4-82-020, Interim Method for Determination of Asbestos in Bulk Insulation Samples, as found in 40 CFR, Part 763, Subpart E, Appendix E (formerly Subpart F, Appendix A), and U.S. EPA 600/R-93/116 (July 1993) Test Methods.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos. If you would like us to further refine the concentration estimates of asbestos in these samples using point counting, please let me know.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Nick Ly, Technical Director

Enc.: Sample Results

NVLAP
Lab Code: 102063-0

1.888.NVL.LABS
1.888.(685.5227)
www.nvllabs.com

NVL Laboratories, Inc.
4708 Aurora Ave N, Seattle, WA 98103
p 206.547.0100 | f 206.634.1936

NVL Laboratories, Inc
4708 Aurora Ave. N., Seattle, WA 98103
Tel: 206.547.0100, Fax: 206.634.1936
www.nvllabs.com

NVLAP
For the scope of accreditation under NVLAP Lab Code 102063-0

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Bureau Veritas North America, Inc.-Hawaii
Address: 841 Bishop Street, Suite 1100
Honolulu, HI 96813

Attention: Mr. Kenney Gomes
Project Location: Radford HS

Batch #: 1321182.00
Client Project #: 1702-012148.00
Date Received: 12/26/2013
Samples Received: 6
Samples Analyzed: 6
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Lab ID: 13147580 **Client Sample #: RHS-1**
Location: Radford HS

Layer 1 of 1 **Description:** Off-white fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles	Cellulose 33%	**Chrysotile 55%**

Lab ID: 13147581 **Client Sample #: RHS-2**
Location: Radford HS

Layer 1 of 1 **Description:** Off-white fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles	Cellulose 37%	**Chrysotile 51%**

Lab ID: 13147582 **Client Sample #: RHS-3**
Location: Radford HS

Layer 1 of 1 **Description:** Off-white fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles	Cellulose 35%	**Chrysotile 53%**

Lab ID: 13147583 **Client Sample #: RHS-4**
Location: Radford HS

Layer 1 of 3 **Description:** Off-white/brown fibrous material with debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Glass debris	Glass fibers 68%	**None Detected ND**
	Cellulose 13%	

Layer 2 of 3 **Description:** Off-white brittle material with woven fibrous material and silver paper

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Calcareous binder	Cellulose 28%	**None Detected ND**

Sampled by: Client
Analyzed by: Jacob Laugeson **Date:** 12/27/2013
Reviewed by: Nick Ly **Date:** 12/27/2013

Nick Ly, Technical Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government.

NVL Laboratories, Inc
4708 Aurora Ave. N., Seattle, WA 98103
Tel: 206.547.0100, Fax: 206.634.1936
www.nvllabs.com

NVLAP
For the scope of accreditation under NVLAP Lab Code 102063-0

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Bureau Veritas North America, Inc.-Hawaii
Address: 841 Bishop Street, Suite 1100
Honolulu, HI 96813

Attention: **Mr. Kenney Gomes**
Project Location: Radford HS

Batch #: 1321182.00
Client Project #: 1702-012148.00
Date Received: 12/26/2013
Samples Received: 6
Samples Analyzed: 6
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 3 of 3 **Description:** White brittle material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Mineral grains	Mineral fibers 8%	**None Detected ND**
	Cellulose 3%	

Lab ID: 13147584 **Client Sample #: RHS-5**
Location: Radford HS

Layer 1 of 1 **Description:** Orange fibrous material with debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Glass debris	Glass fibers 52%	**None Detected ND**
	Cellulose 33%	

Lab ID: 13147585 **Client Sample #: RHS-6**
Location: Radford HS

Layer 1 of 1 **Description:** Brown fibrous material with debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Calcareous particles, Glass debris	Glass fibers 61%	**None Detected ND**
	Cellulose 19%	

Sampled by: Client
Analyzed by: Jacob Laugeson **Date:** 12/27/2013
Reviewed by: Nick Ly **Date:** 12/27/2013

Nick Ly, Technical Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government.

NVL Batch ID
1321182

NVL Laboratories, Inc.

4708 Aurora Ave N, Seattle, WA 98103
Tel: 206.547.0100 Emerg.Pager: 206.344.1878
Fax: 206.634.1936 1.888.NVL.LABS (685.5227)

CHAIN of CUSTODY SAMPLE LOG

Client: Bureau Veritas North America, Inc.
Street: 841 Bishop Street, Suite 1100
Honolulu, HI 96813

Project Manager: Ken Gomes
Project Location: Radford HS

NVL Batch Number:
Client Job Number: 17012-92149.00
Total Samples: 6

Turn Around Time: ☐ 1-Hr ☐ 24-Hrs ☐ 4 Days ☐ 2-Hrs ☐ 2 Days ☐ 5 Days ☐ 4-Hrs ☑ 3 Days ☐ 6 to 10 Days
Please call for TAT less than 24 Hrs

Email address: Kenney.gomes@us.bureauveritas.com

Phone: (808) 531-6708 Fax: (808) 537-4084 Cell

☐ Asbestos Air	☐ PCM (NIOSH 7400)	☐ TEM (NIOSH 7402)	☐ TEM (AHERA)	☐ TEM (EPA Level II)	☐ Other	
☒ Asbestos Bulk	☒ PLM (EPA/600/R-93/116)	☐ PLM (EPA Point Count)	☐ PLM (EPA Gravimetry)	☐ TEM Bulk		

METALS	Det. Limit	Matrix		RCRA Metals		Other Metals
☐ Total Metals	☐ ppm (AAS)	☐ Air Filter	☐ Paint Chips	☐ Arsenic (As)	☐ All 8	☐ All 3
☐ TCLP	☐ ppb (GFAA)	☐ Drinking water	☐ Paint Chips (Area)	☐ Barium (Ba)	☐ Lead (Pb)	☐ Copper (Cu)
		☐ Dust/wipe	☐ Waste Water	☐ Cadmium (Cd)	☐ Mercury (Hg)	☐ Nickel (Ni)
		☐ Soil		☐ Chromium (Cr)	☐ Selenium (Se)	☐ Zinc (Zn)
					☐ Silver (Ag)	

☐ Other Types of Analysis: ☐ Fiberglass ☐ Silica ☐ Nuisance Dust ☐ Respirable Dust ☐ Other (Specify)

Condition of Package: ☐ Good ☐ Damaged (no spillage) ☐ Severe damage (spillage)

Seq. #	Lab ID	Client Sample Number	Comments	A/R
1		RHS-1	See the attached data sheet(s)	
2		RHS-2		
3		RHS-3		
4		RHS-4		
5		RHS-5		
6		RHS-6		
7				
8				
9				
10				
11				
12				
13				
14				
15				

	Print Below	Sign Below	Company	Date	Time
Sampled by	Ken Gomes		BVNA - Hawaii	12/19/13	1500
Relinquished by	Ken Gomes		BVNA - Hawaii	12/23/13	1230
Received by	Nilson Kuba		NVL	12/26/13	1550 fedex
Analyzed by	Jacob Laugesen		NVL	12-27-13	1335
Results Called by					
Results Faxed by					

Special Instructions: Unless requested in writing, all samples will be disposed of two (2) weeks after analysis.
*Please provide separate reports for each project number

BUREAU VERITAS – Suspect Asbestos-Containing Materials (ACM) Sampling Sheet

Project No. 17012-012148.00
Project Name: Radford HS
Inspectors' Name: AR JM PA SC TKS DG (KG circled)
Bldg. Name / No.
Page: 1 **of** 1
Date: 12/23/13

Sample Number	Sample Location	Material Description	Quantity/Material Location	Category	Friability
RHS-1 RHS-2 RHS-3	Track Excavation, East ↓ , North , West	white fiberous debris	Unknown quantity that is buried	☐ Surfacing ☒ TSI ☐ Misc.	☒ Friable ☐ Non-Friable
RHS-4 RHS-5 RHS-6	Track Excavation, East ↓ , North , West	white / orange fiberous debris	Unknown quantity that is buried	☐ Surfacing ☒ TSI ☐ Misc.	☒ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable

Notes:

NVL Batch ID
1321182

APPENDIX C

LABORATORY ANALYTICAL REPORTS
AND
CHAIN OF CUSTODY FORMS (ESN)

Environmental Services Network

February 8, 2014

Ken Gomes
Bureau Veritas North America, Inc
970 N. Kalaheo, Ste C-316
Kailua, HI 96734

SUBJECT: DATA REPORT – 17012.012148.48, Radford High School

ESN Project # D1402050037

Mr. Gomes:

Please find enclosed a data report for the samples analyzed from the above referenced project for Bureau Veritas North America, Inc. The samples were received intact. Applicable detection limits, QA/QC data, and any issues encountered during analysis are included in the report.

The following tests were conducted:

- Multi-increment sample processing by Hawaii DOH Method.
- Analyses for TPH as diesel by EPA 8015 mod.
- Analyses for TPH as oil by EPA 8015 mod.
- Analyses for organochlorine pesticides by EPA 8081 mod.
- Analyses for polychlorinated biphenyls by EPA 8082 mod.
- Analyses for semi-volatile organic compounds by EPA method 8270.
- Analyses for total RCRA 8 by EPA 6020.
- Analyses for dioxins & furans by EPA 8290.

ESN appreciates the opportunity to have provided analytical services to Bureau Veritas North America, Inc on this project. If you have any further questions relating to the data or report, please do not hesitate to contact us.

Sincerely,

Karen Carvallo
Operations Manager

ESN Pacific
2020-B Kahai Street
Honolulu, HI 96819

Ph: (808) 847-0067
esn@esnpacific.com

ESN PACIFIC'S CHAIN-OF-CUSTODY RECORD

CLIENT: Bureau Veritas
ADDRESS: 841 Bishop Street
PHONE: 531-6708 FAX: 537-4084
EMAIL: kenney.gomes@bureauveritas.com
CLIENT PROJECT #: Project Manager: Ken Gomes

TAT (circle one): 24-hr. 48-hr. (5-day) or Other:
DATE: 2/5/14 PAGE 1 OF 2
ESN PROJECT #: D14020S0037
LOCATION/PROJECT NAME: Radford High School / 17012-012148.48
COLLECTOR: KG/JR/MC/NO DATE COLLECTED: 2/4/14 & 2/5/14

	Sample ID#	~~Depth~~ Date	Time	Sample Type	Container Type	8260 HVOC ext 5035? Y N	8260 VOC ext 5035? Y N	8260 BTEX ext 5035? Y N	8260 MtBE ext 5035? Y N	8015 Fuel Scan only	8015 TPH-Gas ext 5035?	8015 TPH-Diesel	8015 TPH-Oil	8081 Chlor. Pesticides	8082 PCB	8270 PAH DOH-4	8270 PAH EPA-16	8270 SVOC	1010 FlashPoint (Ignitibility)	RCRA 8 Metals	Total Metals	TCLP	Dioxins/Furans 8290			MI Sample Prep	Comments	# of Containers
1	RHS-DU-1	2/4/14	1525									X	X	X	X			X		X			+			X		
2	RHS-DU-1.2	2/5/14	0933									X	X	X	X			X		X			X			X		
3	RHS-DU-1.3	↓	1030									X	X	X	X			X		X			X			X		
4	RHS-DU-2	2/4/14	1500									X	X	X	X			X		X			X			X		
5	RHS-DU-3	│	1403									X	X	X	X			X		X			X			X		
6	RHS-DU-4	│	1145									X	X	X	X			X		X			X			X		
7	RHS-DU-5	│	1220									X	X	X	X			X		X			X			X		
8	RHS-DU-6	│	1402									X	X	X	X			X		X			X			X		
9	RHS-DU-7	│	1131									X	X	X	X			X		X			X			X		
10	RHS-DU-8	│	1424									X	X	X	X			X		X			X			X		
11	RHS-DU-9	↓	1455									X	X	X	X			X		X			X			X		
12	RHS-DU-10	2/5/14	0915									X	X	X	X			X		X			X			X		
13	RHS-DU-11	│	0900									X	X	X	X			X		X			X			X		
14	RHS-DU-12	│	0945									X	X	X	X			X		X			X			X		
15	RHS-DU-13	↓	0945									X	X	X	X			X		X			X			X		
16	RHS-DU-14	2/4/14	1252									X	X	X	X			X		X			X			X		
17	RHS-DU-15	│	1345									X	X	X	X			X		X			X			X		
18	RHS-DU-16	↓	1411									X	X	X	X			X		X			X			X		
19																												
20																												

RELINQUISHED BY:(Signature) [signature] DATE/TIME 2/5/14 1230
RECIEVED BY (Signature) [signature] DATE/TIME 2/5
RELINQUISHED BY:(Signature) DATE/TIME
RECIEVED BY (Signature) DATE/TIME

SAMPLE RECEIPT:
TOTAL # OF CONTAINERS 18
COC SEALS (Y) N / NA
SEALS INTACT (Y) N / NA
RECEIVED TEMP: 3°C

LABORATORY NOTES: MI Samples
RUSH DIOXINS
Hold samples for TCLP / SPLP Testing

SAMPLE DISPOSAL INSTRUCTIONS: ____ ESN @ $5.00/sample or ____ Return to Client

ESN PACIFIC'S CHAIN-OF-CUSTODY RECORD

CLIENT: Bureau Veritas

ADDRESS: 841 Bishop Street Suite 1100

PHONE: 531-6708 FAX: 537-4084

EMAIL: kenney.gomes@us.bureauveritas.com

CLIENT PROJECT #: 17012-92148.48 Project Manager: Ken Gomes

TAT (circle one): 24-hr. 48-hr. (5-day) or Other:

DATE: 2/5/14 PAGE 2 OF 2

ESN PROJECT #: D1402050037

LOCATION/PROJECT NAME: Radford High School

COLLECTOR: KG/JC/MC/NO DATE COLLECTED: 2/4/14 & 2/5/14

#	Sample ID#	Depth	Time	Sample Type	Container Type	8260 HVOC ext 5035? Y N	8260 VOC ext 5035? Y N	8260 BTEX ext 5035? Y N	8260 MtBE ext 5035? Y N	8015 Fuel Scan only	8015 TPH-Gas ext 5035?	8015 TPH-Diesel	8015 TPH-Oil	8081 Chlor. Pesticides	8082 PCB	8270 PAH DOH-4	8270 PAH EPA-16	8270 SVOC	1010 FlashPoint (Ignitibility)	RCRA 8 Metals	Total Metals	~~TCLP~~ ~~DIOXINS~~ / furans 8290	MI Sample Prep	Comments	# of Containers
1	RMS-DV-17	2/4/14	1434									X	X	X	X	X		X		X		X	X		
2	RMS-DV-17.2	↓	~~1502~~ 1449 KG									X	X	X	X	X		X		X		X	X		
3	RMS-DV-17.3	↓	1502									X	X	X	X	X		X		X		X	X		
4	RMS-DV-18	↓	1300									X	X	X	X	X		X		X		X	X		
5	RMS-DV-19	↓	1422									X	X	X	X	X		X		X		X	X		
6	RMS-DV-20	↓	1146									X	X	X	X	X		X		X		X	X		
7	RMS-DV-21	↓	1226									X	X	X	X	X		X		X		X	X		
8	RMS-DV-22	↓	1015									X	X	X	X	X		X		X		X	X		
9	RMS-DV-23	↓	1023									X	X	X	X	X		X		X		X	X		
10	RMS-DV-24	↓	1050									X	X	X	X	X		X		X		X	X		
11	RMS-DV-25	↓	1115									X	X	X	X	X		X		X		X	X		
12	RMS-DV-26	↓	1020									X	X	X	X	X		X		X		X	X		
13	RMS-DV-26.2	↓	1059									X	X	X	X	X		X		X		X	X		
14	RMS-DV-26.3	↓	1145									X	X	X	X	X		X		X		X	X		
15	RMS-DV-27	↓	1000									X	X	X	X	X		X		X		X	X		
16	RMS-DV-28	↓	1007									X	X	X	X	X		X		X		X	X		
17	RMS-DV-29	↓	0945									X	X	X	X	X		X		X		X			
18																KG									
19																									
20																									

RELINQUISHED BY:(Signature) [signature] DATE/TIME 2/5/14 1230

RECIEVED BY (Signature) [signature] DATE/TIME 2/5

RELINQUISHED BY:(Signature) DATE/TIME

RECIEVED BY (Signature) DATE/TIME

SAMPLE RECEIPT:

TOTAL # OF CONTAINERS 17

COC SEALS (Y) / N / NA

SEALS INTACT (Y) / N / NA

RECEIVED TEMP: 3°C

LABORATORY NOTES:

MI Samples

RUSH DIOXINS

Hold samples for TCLP / SPLP Testing

SAMPLE DISPOSAL INSTRUCTIONS: ____ ESN @ $5.00/sample or ____ Return to Client

Environmental Services Network

NON-VOLATILE
MULTI-INCREMENT PREPARATION

DATE: 2/6 and 2/7/2014

PREPARED BY: A. Crowell, N. Kippen, Z. Tullis

ESN PROJECT: D1402050037

Bureau Veritas North America, Inc., personnel collected multi-increment samples in the field for analysis. The samples were delivered to ESN's lab for preparation and analyses, according to DOH's Multi-Increment Sampling Plan (HEER TGM, Section 4.2).

(Dry weights)

Sample ID#	Sample Weight (g)
RHS-DU-1	1655.9
RHS-DU-1.2	2490.1
RHS-DU-1.3	2749.6
RHS-DU-2	2403.1
RHS-DU-3	1348.7
RHS-DU-4	1361.4
RHS-DU-5	2393.6
RHS-DU-6	1982.6
RHS-DU-7	2190.7
RHS-DU-8	1738.5
RHS-DU-9	1346.9
RHS-DU-10	1895.3
RHS-DU-11	1361.0
RHS-DU-12	2363.9
RHS-DU-13	2176.6
RHS-DU-14	1584.5
RHS-DU-15	1880.3
RHS-DU-16	2119.8
RHS-DU-17	1802.0
RHS-DU-17.2	1897.2
RHS-DU-17.3	2067.8
RHS-DU-18	1770.5
RHS-DU-19	1451.4
RHS-DU-20	1934.5
RHS-DU-21	1588.3
RHS-DU-22	1857.2

RHS-DU-23	2096.1
RHS-DU-24	1690.8
RHS-DU-25	1412.7
RHS-DU-26	1806.5
RHS-DU-26.2	2268.0
RHS-DU-26.3	2205.2
RHS-DU-27	2204.1
RHS-DU-28	974.8
RHS-DU-29	1061.8

SAMPLE PREP PROCESS SUMMARY:

- Each sample was emptied from their containers on to its own clean, flat baking pan. The sample was spread out evenly across the pan no more than 1" high in thickness.
- Sample trays were placed on separate oven racks and air-dried overnight or until no significant moisture remained as determined by appearance.
- Sample trays were removed and weighed to determine sample's total dry weight (see above table).
- Sieved entire dried sample through a #10 mesh sieve rendering particles less than two-millimeters in size. Clumps of dirt were crushed until able to pass through the sieve, rocks and other debris were set aside.
- Sieved samples were spread out evenly on flat baking pans.
- A small flat spatula was used to randomly scoop up 30 to 50 small increments to fill sample containers. Care was taken during this step to ensure that samples contained a good distribution of particle sizes. If duplicate or triplicate analysis is requested, additional samples are collected at this time. Remaining sample was returned to resealable (i.e. Zip-Loc) bags.

Environmental Services Network

ESN Pacific Inc.

Bureau Veritas North America, Inc. PROJECT #17012.012148.48
Radford High School

ESN Project #D1402050037

PCB ANALYSES OF SOILS BY EPA 8082 MODIFIED

SAMPLE NUMBER	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PCB-1016 (mg/kg)	PCB-1221 (mg/kg)	PCB-1232 (mg/kg)	PCB-1242 (mg/kg)	PCB-1248 (mg/kg)	PCB-1254 (mg/kg)	PCB-1260 (mg/kg)	SURROGATE RECOVERY(%)	FLAGS
Method Blank	-	2/6/2014	2/7/2014	nd	nd	nd	nd	nd	nd	nd	91%	
RHS-DU-1	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	67%	
RHS-DU-1 Dup	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	78%	
RHS-DU-1.2	2/5/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	68%	
RHS-DU-1.3	2/5/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	71%	
RHS-DU-2	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	0.10	84%	
RHS-DU-3	2/4/2014	2/6/2014	2/12/2014	nd	nd	nd	nd	nd	nd	0.21	88%	
RHS-DU-4	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	87%	
RHS-DU-5	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	0.05	74%	
RHS-DU-6	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	72%	
RHS-DU-7	2/4/2014	2/6/2014	2/7/2014	nd	nd	nd	nd	nd	nd	0.09	88%	
RHS-DU-8	2/4/2014	2/6/2014	2/7/2014	nd	nd	nd	nd	nd	nd	0.17	82%	
RHS-DU-9	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	0.32	83%	
RHS-DU-10	2/5/2014	2/6/2014	2/12/2014	nd	nd	nd	nd	nd	nd	0.66	84%	
RHS-DU-11	2/5/2014	2/6/2014	2/14/2014	nd	nd	nd	nd	nd	nd	3.27	DO	DF 2
RHS-DU-12	2/5/2014	2/6/2014	2/14/2014	nd	nd	nd	nd	nd	nd	2.17	DO	DF 2
RHS-DU-13	2/5/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	1.00	83%	
RHS-DU-14	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	0.13	80%	
RHS-DU-15	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	0.23	80%	
RHS-DU-16	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	80%	
PQL				0.10	0.20	0.20	0.05	0.05	0.05	0.05		
MDL				0.05	0.15	0.10	0.04	0.02	0.04	0.04		
2005 HI DOH EAL				1.10	1.10	1.10	1.10	1.10	1.10	1.10		

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX): 65% - 135%

DF: Reported result calculated from dilution factor, multiply detection limit by dilution factor.
DO: Diluted out.

QA/QC DATA - LABORATORY CONTROL SPIKE ANALYSES

Spike Added	1.00	1.00
Measured Conc.	1.05	0.98
% Recovery	104.9%	98.4%

QA/QC DATA - MATRIX SPIKE ANALYSES

Sample Name: RHS-DU-1

Spike Added	1.00	1.00
Measured Conc.	0.86	0.93
% Recovery	86.3%	92.6%
Spike Added	1.00	1.00
Measured Conc.	0.85	0.94
% Recovery	85.0%	94.4%
RPD	1.5%	2.0%

% Recovery LIMITS: 80% TO 120%
RPD LIMIT: 20%

ANALYSES PERFORMED AND REVIEWED BY : K. Carvallo

2020 Kahai Street, Honolulu, Hawaii 96819

ESN Pacific Inc.

Environmental Services Network

Bureau Veritas North America, Inc. PROJECT #17012.012148.48
Radford High School

ESN Project #D1402050037

PCB ANALYSES OF SOILS BY EPA 8082 MODIFIED

SAMPLE NUMBER	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PCB-1016 (mg/kg)	PCB-1221 (mg/kg)	PCB-1232 (mg/kg)	PCB-1242 (mg/kg)	PCB-1248 (mg/kg)	PCB-1254 (mg/kg)	PCB-1260 (mg/kg)	SURROGATE RECOVERY(%)	FLAGS
Method Blank	-	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	71%	
RHS-DU-17	2/4/2014	2/7/2014	2/14/2014	nd	nd	nd	nd	nd	nd	2.23	DO	DF 2
RHS-DU-17 Dup	2/4/2014	2/7/2014	2/14/2014	nd	nd	nd	nd	nd	nd	2.26	DO	DF 2
RHS-DU-17.2	2/4/2014	2/6/2014	2/14/2014	nd	nd	nd	nd	nd	nd	2.35	DO	DF 2
RHS-DU-17.3	2/4/2014	2/7/2014	2/14/2014	nd	nd	nd	nd	nd	nd	2.24	DO	DF 2
RHS-DU-18	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	1.19	77%	
RHS-DU-19	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	0.47	83%	
RHS-DU-20	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	0.29	96%	
RHS-DU-21	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	0.20	78%	
RHS-DU-21 Dup	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	0.24	75%	
RHS-DU-22	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	0.25	78%	
RHS-DU-23	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	1.46	86%	
RHS-DU-24	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	87%	
RHS-DU-25	2/4/2014	2/6/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	82%	
RHS-DU-26	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	nd	69%	
RHS-DU-26.2	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	nd	68%	
RHS-DU-26.3	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	nd	85%	
RHS-DU-27	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	nd	95%	
RHS-DU-28	2/4/2014	2/7/2014	2/10/2014	nd	nd	nd	nd	nd	nd	nd	87%	
RHS-DU-29	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	nd	70%	
RHS-DU-29 Dup	2/4/2014	2/7/2014	2/12/2014	nd	nd	nd	nd	nd	nd	nd	83%	
PQL				0.10	0.20	0.20	0.05	0.05	0.05	0.05		
MDL				0.05	0.15	0.10	0.04	0.02	0.04	0.04		
2005 HI DOH EAL				1.10	1.10	1.10	1.10	1.10	1.10	1.10		

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX): 65% - 135%

DF: Reported result calculated from dilution factor, multiply detection limit by dilution factor.
DO: Diluted out.

QA/QC DATA - LABORATORY CONTROL SPIKE ANALYSES

Spike Added	1.00	1.00
Measured Conc.	0.96	0.99
% Recovery	95.9%	99.4%

QA/QC DATA - MATRIX SPIKE ANALYSES

Sample Name: RHS-DU-21
*Any hits in sample spiked for MS/MSD are subtracted before reported as measured concentration.

Spike Added	1.00	1.00
Measured Conc.	1.02	0.83
% Recovery	102.4%	83.0%
Spike Added	1.00	1.00
Measured Conc.	0.89	0.93
% Recovery	89.2%	93.3%
RPD	13.8%	11.6%

% Recovery LIMITS: 80% TO 120%
RPD LIMIT: 20%

ANALYSES PERFORMED AND REVIEWED BY : K. Carvallo

2020 Kahai Street, Honolulu, Hawaii 96819

ESN Pacific Inc.

Environmental Services Network

Bureau Veritas North America, Inc. PROJECT #17012.012148.48
Radford High School

ESN Project #D1402050037

ORGANOCHLORINE PESTICIDES ANALYSES OF SOILS BY EPA 8081A MODIFIED

SAMPLE NUMBER	Method Blank	RHS-DU-1	RHS-DU-1 Dup	RHS-DU-1.2	RHS-DU-1.3	RHS-DU-2	RHS-DU-3	RHS-DU-4	RHS-DU-5	RHS-DU-6	RHS-DU-7	RHS-DU-8	PQL	MDL
DATE SAMPLED	-	2/4/2014	2/4/2014	2/5/2014	2/5/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014		
DATE EXTRACTED	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014		
DATE ANALYZED	2/6/2014	2/11/2014	2/11/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014		
Alpha-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Beta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.003
Gamma-BHC (Lindane)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Delta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Aldrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor epoxide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Gamma-Chlordane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Endosulfan I	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Alpha-Chlordane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Dieldrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.017	0.045	0.010	0.003
p,p'-DDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	nd	0.010	0.003
Endrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endosulfan II	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDD	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endrin aldehyde	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.006
Endosulfan sulfate	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDT	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.011	0.010	0.005
Endrin ketone	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
Methoxychlor	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.009
Chlordane (technical)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.050	0.020
Toxaphene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.050	0.010
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
FLAGS														
SURROGATE RECOVERY (%)	87%	80%	84%	86%	88%	86%	90%	88%	87%	96%	89%	87%		

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX): 65%- 135%

QA/QC DATA - LABORATORY CONTROL SPIKE ANALYSES

	Laboratory Control Spike		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Beta-BHC	0.050	0.044	87.4%
p,p'-DDE	0.100	0.085	85.1%
Endrin ketone	0.100	0.095	94.9%

QA/QC DATA - MATRIX SPIKE ANALYSES
Sample Name: RHS-DU-1

	Matrix Spike			Matrix Spike Duplicate				
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	RPD (%)	FLAGS
Beta-BHC	0.050	0.048	95.2%	0.050	0.056	112.0%	16.2%	
p,p'-DDE	0.100	0.097	97.2%	0.100	0.112	111.5%	13.7%	
Endrin ketone	0.100	0.095	95.0%	0.100	0.104	103.9%	8.9%	

% Recovery LIMITS: 80% TO 120%
RPD LIMIT: 20%

ANALYSES PERFORMED AND REVIEWED BY : K. Carvallo

Environmental Services Network

ESN Pacific Inc.

Bureau Veritas North America, Inc. PROJECT #17012.012148.48
Radford High School

ESN Project #D1402050037

ORGANOCHLORINE PESTICIDES ANALYSES OF SOILS BY EPA 8081A MODIFIED

SAMPLE NUMBER	Method Blank	RHS-DU-9	RHS-DU-10	RHS-DU-11	RHS-DU-12	RHS-DU-13	RHS-DU-14	RHS-DU-15	RHS-DU-16	RHS-DU-17	RHS-DU-17 Dup	PQL	MDL
DATE SAMPLED	-	2/4/2014	2/5/2014	2/5/2014	2/5/2014	2/5/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014		
DATE EXTRACTED	2/6/2014	2/7/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/6/2014	2/7/2014	2/7/2014		
DATE ANALYZED	2/11/2014	2/13/2014	2/6/2014	2/13/2014	2/13/2014	2/11/2014	2/11/2014	2/11/2014	2/11/2014	2/13/2014	2/13/2014		
Alpha-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Beta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.003
Gamma-BHC (Lindane)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Delta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Aldrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor epoxide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Gamma-Chlordane	nd	nd	0.006	0.024	0.014	0.022	nd	nd	nd	nd	nd	0.005	0.002
Endosulfan I	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Alpha-Chlordane	nd	nd	0.006	nd	nd	nd	0.006	nd	nd	nd	nd	0.005	0.002
Dieldrin	nd	nd	0.027	0.034	nd	nd	0.014	nd	nd	nd	nd	0.010	0.003
p,p'-DDE	nd	nd	nd	nd	0.036	0.016	0.012	nd	nd	nd	nd	0.010	0.003
Endrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endosulfan II	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDD	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endrin aldehyde	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.006
Endosulfan sulfate	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDT	nd	0.021	0.040	0.216	0.174	0.051	0.012	0.021	nd	0.164	0.161	0.010	0.005
Endrin ketone	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
Methoxychlor	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.009
Chlordane (technical)	nd	nd	nd	0.113	0.127	nd	nd	nd	0.050	nd	0.172	0.050	0.020
Toxaphene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.050	0.010
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
FLAGS				DF 2	DF 2					DF 2	DF 2, DOUT1		
SURROGATE RECOVERY (%)	101%	79%	93%	DO	DO	83%	87%	84%	83%	DO	DO		

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX): 65%- 135%

DF: Reported result calculated from dilution factor, multiply detection limit by dilution factor.
DO: Diluted out.
DOUT1: RPD for duplicates outside acceptable limit (20%). Matrix may be nonhomogenous.

QA/QC DATA - LABORATORY CONTROL SPIKE ANALYSES

	Laboratory Control Spike		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Beta-BHC	0.050	0.044	87.4%
p,p'-DDE	0.100	0.085	85.1%
Endrin ketone	0.100	0.095	94.9%

% Recovery LIMITS: 80% TO 120%
RPD LIMIT: 20%

ANALYSES PERFORMED AND REVIEWED BY : K. Carvallo

Environmental Services Network

ESN Pacific Inc.

Bureau Veritas North America, Inc. PROJECT #17012.012148.48
Radford High School

ESN Project #D1402050037

ORGANOCHLORINE PESTICIDES ANALYSES OF SOILS BY EPA 8081A MODIFIED

SAMPLE NUMBER	Method Blank	RHS-DU-17.2	RHS-DU-17.3	RHS-DU-18	RHS-DU-19	RHS-DU-20	RHS-DU-21	RHS-DU-21 Dup	RHS-DU-22	RHS-DU-23	RHS-DU-24	RHS-DU-25	PQL	MDL
DATE SAMPLED	-	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014		
DATE EXTRACTED	2/6/2014	2/6/2014	2/7/2014	2/7/2014	2/7/2014	2/6/2014	2/6/2014	2/6/2014	2/7/2014	2/7/2014	2/6/2014	2/6/2014		
DATE ANALYZED	2/13/2014	2/13/2014	2/13/2014	2/13/2014	2/13/2014	2/11/2014	2/13/2014	2/13/2014	2/13/2014	2/13/2014	2/11/2014	2/11/2014		
Alpha-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Beta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.003
Gamma-BHC (Lindane)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Delta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Aldrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor epoxide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Gamma-Chlordane	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Endosulfan I	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Alpha-Chlordane	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.011	nd	nd	0.005	0.002
Dieldrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.017	nd	nd	0.010	0.003
p,p'-DDE	nd	nd	nd	0.030	nd	nd	nd	nd	nd	0.011	nd	nd	0.010	0.003
Endrin	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endosulfan II	nd	nd	nd	0.054	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDD	nd	nd	nd	nd	nd	0.013	nd	nd	nd	nd	nd	nd	0.010	0.003
Endrin aldehyde	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.006
Endosulfan sulfate	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDT	nd	0.195	0.175	0.132	0.025	0.019	0.015	0.018	0.022	0.074	nd	nd	0.010	0.005
Endrin ketone	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
Methoxychlor	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.009
Chlordane (technical)	nd	nd	0.225	nd	nd	nd	nd	nd	nd	0.057	nd	nd	0.050	0.020
Toxaphene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.050	0.010
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
FLAGS		DF 2	DF 2											
SURROGATE RECOVERY (%)	96%	DO	DO	81%	83%	100%	78%	73%	80%	85%	107%	85%		

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX): 65%- 135%

DF: Reported result calculated from dilution factor, multiply detection limit by dilution factor.
DO: Diluted out.

QA/QC DATA - LABORATORY CONTROL SPIKE ANALYSES

	Laboratory Control Spike		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Beta-BHC	0.050	0.048	96.6%
p,p'-DDE	0.100	0.097	96.7%
Endrin ketone	0.100	0.100	99.7%

QA/QC DATA - MATRIX SPIKE ANALYSES
Sample Name: RHS-DU-21
*Any hits or matrix interference in sample spiked for MS/MSD are subtracted before reported as measured concentration.

	Matrix Spike			Matrix Spike Duplicate				
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	RPD (%)	FLAGS
Beta-BHC	0.050	0.045	89.0%	0.050	0.050	99.4%	11.0%	
p,p'-DDE	0.100	0.098	97.5%	0.100	0.119	119.0%	19.9%	
Endrin ketone	0.100	0.118	118.1%	0.100	0.110	109.9%	7.2%	

% Recovery LIMITS: 80% TO 120%
RPD LIMIT: 20%

ANALYSES PERFORMED AND REVIEWED BY : K. Carvallo

ESN Pacific Inc.

Environmental Services Network

Bureau Veritas North America, Inc. PROJECT #17012.012148.48
Radford High School

ESN Project #D1402050037

ORGANOCHLORINE PESTICIDES ANALYSES OF SOILS BY EPA 8081A MODIFIED

SAMPLE NUMBER	Method Blank	RHS-DU-26	RHS-DU-26.2	RHS-DU-26.3	RHS-DU-27	RHS-DU-28	RHS-DU-29	RHS-DU-29 Dup	PQL	MDL
DATE SAMPLED	-	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014	2/4/2014		
DATE EXTRACTED	2/6/2014	2/7/2014	2/7/2014	2/7/2014	2/7/2014	2/7/2014	2/7/2014	2/7/2014		
DATE ANALYZED	2/13/2014	2/13/2014	2/13/2014	2/13/2014	2/13/2014	2/11/2014	2/11/2014	2/11/2014		
Alpha-BHC	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Beta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.003
Gamma-BHC (Lindane)	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Delta-BHC	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Aldrin	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Heptachlor epoxide	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Gamma-Chlordane	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Endosulfan I	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Alpha-Chlordane	nd	nd	nd	nd	nd	nd	nd	nd	0.005	0.002
Dieldrin	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
p,p'-DDE	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endrin	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endosulfan II	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDD	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.003
Endrin aldehyde	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.006
Endosulfan sulfate	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
p,p'-DDT	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
Endrin ketone	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.005
Methoxychlor	nd	nd	nd	nd	nd	nd	nd	nd	0.010	0.009
Chlordane (technical)	nd	nd	nd	nd	nd	nd	nd	nd	0.050	0.020
Toxaphene	nd	nd	nd	nd	nd	nd	nd	nd	0.050	0.010
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
FLAGS										
SURROGATE RECOVERY (%)	96%	95%	76%	88%	94%	96%	94%	85%		

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX): 65%- 135%

QA/QC DATA - LABORATORY CONTROL SPIKE ANALYSES

	Laboratory Control Spike		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Beta-BHC	0.050	0.048	96.6%
p,p'-DDE	0.100	0.097	96.7%
Endrin ketone	0.100	0.100	99.7%

% Recovery LIMITS: 80% TO 120%
RPD LIMIT: 20%

ANALYSES PERFORMED AND REVIEWED BY : K. Carvallo

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas North America, Inc.
RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil by Method NWTPH-Dx Extended (8015M)

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)
Method Blank	2/10/2014	2/11/2014	112	nd	nd
LCS	2/10/2014	2/11/2014	100	107%	---
RHS-DU-1	2/10/2014	2/11/2014	109	nd	nd
RHS-DU-1.2	2/10/2014	2/11/2014	105	nd	nd
RHS-DU-1.3	2/10/2014	2/11/2014	104	nd	nd
RHS-DU-2	2/10/2014	2/11/2014	98	nd	nd
RHS-DU-3	2/10/2014	2/11/2014	96	nd	nd
RHS-DU-4	2/10/2014	2/11/2014	104	nd	nd
RHS-DU-5	2/10/2014	2/11/2014	106	nd	nd
RHS-DU-6	2/10/2014	2/11/2014	109	nd	nd
RHS-DU-7	2/10/2014	2/11/2014	77	nd	nd
RHS-DU-8	2/10/2014	2/11/2014	89	nd	nd
RHS-DU-9	2/10/2014	2/11/2014	114	nd	nd
RHS-DU-10	2/10/2014	2/11/2014	78	nd	nd
RHS-DU-11	2/10/2014	2/11/2014	115	nd	nd
RHS-DU-12	2/10/2014	2/11/2014	111	nd	nd
RHS-DU-13	2/12/2014	2/13/2014	89	nd	nd
RHS-DU-13 Duplicate	2/12/2014	2/13/2014	83	nd	nd
RHS-DU-14	2/12/2014	2/13/2014	90	nd	nd
RHS-DU-15	2/12/2014	2/13/2014	82	nd	nd
RHS-DU-16	2/12/2014	2/13/2014	76	nd	nd
RHS-DU-16 Duplicate	2/12/2014	2/13/2014	84	nd	nd
RHS-DU-17	2/10/2014	2/11/2014	109	nd	nd
RHS-DU-17.2	2/10/2014	2/11/2014	100	nd	nd
RHS-DU-17.3	2/10/2014	2/11/2014	104	nd	nd
RHS-DU-18	2/10/2014	2/11/2014	90	nd	nd
RHS-DU-19	2/10/2014	2/11/2014	78	nd	nd
RHS-DU-20	2/10/2014	2/11/2014	96	nd	nd
RHS-DU-21	2/10/2014	2/11/2014	91	nd	nd
RHS-DU-22	2/11/2014	2/12/2014	89	nd	nd
RHS-DU-23	2/11/2014	2/12/2014	87	nd	nd
RHS-DU-24	2/11/2014	2/12/2014	93	nd	nd
RHS-DU-25	2/11/2014	2/12/2014	90	nd	nd
RHS-DU-26	2/11/2014	2/12/2014	93	nd	nd
RHS-DU-26.2	2/11/2014	2/12/2014	92	nd	nd
RHS-DU-26.3	2/12/2014	2/13/2014	77	nd	nd
RHS-DU-27	2/12/2014	2/13/2014	80	nd	nd
RHS-DU-28	2/12/2014	2/13/2014	78	nd	nd
RHS-DU-29	2/12/2014	2/13/2014	77	nd	nd
RHS-DU-29 Duplicate	2/12/2014	2/13/2014	77	nd	nd
Reporting Limits				50	100

"nd" Indicates not detected at the listed detection limits.
"---" Indicates analyte not tested.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas North America, Inc
RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	RHS-DU-1	RHS-DU-1.2	RHS-DU-1.3	RHS-DU-2	RHS-DU-3
Date extracted	Reporting	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14
Date analyzed	Limits	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Moisture, %	(mg/kg)			6%	9%	12%	12%	12%
Pyridine	1.0	nd		nd	nd	nd	nd	nd
Aniline	1.0	nd		nd	nd	nd	nd	nd
Phenol	0.41*	nd		nd	nd	nd	nd	nd
2-Chlorophenol	0.36*	nd		nd	nd	nd	nd	nd
Bis (2-chloroethyl) ether	0.40*	nd		nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.34*	nd		nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.26*	nd	150%	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.38*	nd		nd	nd	nd	nd	nd
Benzyl alcohol	1.0	nd		nd	nd	nd	nd	nd
Hexacholorethane	0.39*	nd		nd	nd	nd	nd	nd
N-Nitroso-di-n-propylamine	1.0	nd	131%	nd	nd	nd	nd	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd		nd	nd	nd	nd	nd
2-Methylphenol (o-cresol)	1.0	nd		nd	nd	nd	nd	nd
Bis (2-chloroisopropyl) ether	0.42*	nd		nd	nd	nd	nd	nd
Nitrobenzene	0.41*	nd		nd	nd	nd	nd	nd
Isophorone	0.41*	nd		nd	nd	nd	nd	nd
2-Nitrophenol	5.0	nd		nd	nd	nd	nd	nd
2,4-Dimethylphenol	1.0	nd		nd	nd	nd	nd	nd
Bis (2-chloroethoxy) methane	1.0	nd		nd	nd	nd	nd	nd
2,4-Dichlorophenol	0.36*	nd		nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.40*	nd	141%	nd	nd	nd	nd	nd
Naphthalene	1.0	nd		nd	nd	nd	nd	nd
4-Chloroaniline	0.46*	nd		nd	nd	nd	nd	nd
Hexachlorobutadiene	0.43*	nd	149%	nd	nd	nd	nd	nd
4-Chloro-3-methylphenol	5.0	nd		nd	nd	nd	nd	nd
2-Methylnapthalene	1.0	nd		nd	nd	nd	nd	nd
1-Methylnapthalene	1.0	nd		nd	nd	nd	nd	nd
Hexachlorocyclopentadiene	1.0	nd		nd	nd	nd	nd	nd
2,4,6-Trichlorophenol	5.0	nd		nd	nd	nd	nd	nd
2,4,5-Trichlorophenol	5.0	nd		nd	nd	nd	nd	nd
2-Chloronaphthalene	1.0	nd		nd	nd	nd	nd	nd
2-Nitroaniline	5.0	nd		nd	nd	nd	nd	nd
1,4-Dinitrobenzene	5.0	nd		nd	nd	nd	nd	nd
Acenaphthylene	0.1	nd		nd	nd	nd	nd	nd
1,3-Dinotrobenzene	0.28*	nd		nd	nd	nd	nd	nd
Dimethylphthalate	1.0	nd		nd	nd	nd	nd	nd
2,6-Dinitrotoluene	1.0	nd		nd	nd	nd	nd	nd
1,2-Dinitrobenzene	1.0	nd		nd	nd	nd	nd	nd
Acenaphthene	0.1	nd	145%	nd	nd	nd	nd	nd
3-Nitroaniline	5.0	nd		nd	nd	nd	nd	nd
2,4-Dinitrophenol	1.0*	nd	51%	nd	nd	nd	nd	nd
2,4-Dinitrotoluene	0.35*	nd	145%	nd	nd	nd	nd	nd
4-Nitrophenol	5.0	nd	61%	nd	nd	nd	nd	nd
Dibenzofuran	1.0	nd		nd	nd	nd	nd	nd
2,3,4,6-Tetrachlorophenol	1.0	nd		nd	nd	nd	nd	nd
2,3,5,6-Tetrachlorophenol	1.0	nd		nd	nd	nd	nd	nd
Fluorene	0.1	nd		nd	nd	nd	nd	nd
4-Chlorophenylphenylether	1.0	nd		nd	nd	nd	nd	nd
Diethylphthalate	1.0	nd		nd	nd	nd	nd	nd
4-Nitroaniline	5.0	nd		nd	nd	nd	nd	nd
4,6-Dinitro-2-methylphenol	5.0	nd		nd	nd	nd	nd	nd
N-nitrosodiphenylamine	1.0	nd		nd	nd	nd	nd	nd
Azobenzene	1.0	nd		nd	nd	nd	nd	nd
4-Bromophenylphenylether	1.0	nd		nd	nd	nd	nd	nd
Hexachlorobenzene	0.45*	nd		nd	nd	nd	nd	nd

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas North America, Inc
RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	RHS-DU-1	RHS-DU-1.2	RHS-DU-1.3	RHS-DU-2	RHS-DU-3
Date extracted	Reporting	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14
Date analyzed	Limits	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Moisture, %	(mg/kg)			6%	9%	12%	12%	12%
Pentachlorophenol	1.0*	nd	72%	nd	nd	nd	nd	nd
Phenanthrene	0.1	nd		nd	nd	nd	nd	nd
Anthracene	0.1	nd		nd	nd	nd	nd	nd
Carbazole	1.0	nd		nd	nd	nd	nd	nd
Di-n-butylphthalate	1.0	nd		nd	nd	nd	nd	nd
Fluoranthene	0.1	nd	128%	nd	nd	nd	**0.12**	**0.12**
Pyrene	0.1	nd	133%	nd	nd	nd	**0.15**	**0.14**
Butylbenzylphthalate	1.0	nd		nd	nd	nd	nd	nd
Bis(2-ethylhexyl) adipate	1.0	nd		nd	nd	nd	nd	nd
Benzo(a)anthracene	0.1	nd		nd	nd	nd	nd	nd
Chrysene	0.1	nd		nd	nd	nd	nd	**0.13**
Bis (2-ethylhexyl) phthalate	1.0	nd		nd	nd	nd	nd	nd
Di-n-octyl phthalate	1.0	nd	138%	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.1	nd		nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.1	nd		nd	nd	nd	nd	nd
Benzo(a)pyrene	0.1	nd	69%	nd	nd	nd	nd	nd
Dibenzo(a,h)anthracene	0.1	nd		nd	nd	nd	nd	nd
Benzo(ghi)perylene	0.1	nd		nd	nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd		nd	nd	nd	nd	nd
Surrogate recoveries								
2-Fluorophenol		132%	141%	137%	127%	130%	121%	129%
Phenol-d6		133%	143%	130%	111%	121%	106%	115%
Nitrobenzene-d5		120%	152%	114%	111%	116%	109%	117%
2-Fluorobiphenyl		141%	145%	143%	141%	138%	139%	143%
2,4,6-Tribromophenol		49%	123%	57%	54%	65%	70%	74%
4-Terphenyl-d14		115%	123%	112%	108%	106%	101%	99%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
* - method detection limit

Acceptable Recovery limits:
2-Fluorophenol: 10-135 %
Phenol - d5: 10-135 %
Nitrobenzene - d5: 20-120 %
2-Flurobiphenyl: 50-150%
2,4,6- Tribromophenol: 29-159%
p-Terphenyl-d14: 50-150%

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-4	RHS-DU-5	RHS-DU-6	RHS-DU-7	RHS-DU-8	RHS-DU-9	RHS-DU-10
Date extracted	Reporting	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14
Date analyzed	Limits	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Moisture, %	(mg/kg)	18%	14%	16%	22%	15%	9%	10%
Pyridine	1.0	nd	nd	nd	nd	nd	nd	nd
Aniline	1.0	nd	nd	nd	nd	nd	nd	nd
Phenol	0.41*	nd	nd	nd	nd	nd	nd	nd
2-Chlorophenol	0.36*	nd	nd	nd	nd	nd	nd	nd
Bis (2-chloroethyl) ether	0.40*	nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.34*	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.26*	nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.38*	nd	nd	nd	nd	nd	nd	nd
Benzyl alcohol	1.0	nd	nd	nd	nd	nd	nd	nd
Hexacholorethane	0.39*	nd	nd	nd	nd	nd	nd	nd
N-Nitroso-di-n-propylamine	1.0	nd	nd	nd	nd	nd	nd	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd	nd	nd	nd	nd	nd	nd
2-Methylphenol (o-cresol)	1.0	nd	nd	nd	nd	nd	nd	nd
Bis (2-chloroisopropyl) ether	0.42*	nd	nd	nd	nd	nd	nd	nd
Nitrobenzene	0.41*	nd	nd	nd	nd	nd	nd	nd
Isophorone	0.41*	nd	nd	nd	nd	nd	nd	nd
2-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd	nd
2,4-Dimethylphenol	1.0	nd	nd	nd	nd	nd	nd	nd
Bis (2-chloroethoxy) methane	1.0	nd	nd	nd	nd	nd	nd	nd
2,4-Dichlorophenol	0.36*	nd	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.40*	nd	nd	nd	nd	nd	nd	nd
Naphthalene	1.0	nd	nd	nd	nd	nd	nd	nd
4-Chloroaniline	0.46*	nd	nd	nd	nd	nd	nd	nd
Hexachlorobutadiene	0.43*	nd	nd	nd	nd	nd	nd	nd
4-Chloro-3-methylphenol	5.0	nd	nd	nd	nd	nd	nd	nd
2-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd	nd
1-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd	nd
Hexachlorocyclopentadiene	1.0	nd	nd	nd	nd	nd	nd	nd
2,4,6-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd	nd
2,4,5-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd	nd
2-Chloronaphthalene	1.0	nd	nd	nd	nd	nd	nd	nd
2-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd	nd
1,4-Dinitrobenzene	5.0	nd	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.1	nd	nd	nd	nd	nd	nd	nd
1,3-Dinotrobenzene	0.28*	nd	nd	nd	nd	nd	nd	nd
Dimethylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
2,6-Dinitrotoluene	1.0	nd	nd	nd	nd	nd	nd	nd
1,2-Dinitrobenzene	1.0	nd	nd	nd	nd	nd	nd	nd
Acenaphthene	0.1	nd	nd	nd	nd	nd	nd	nd
3-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd	nd
2,4-Dinitrophenol	1.0*	nd	nd	nd	nd	nd	nd	nd
2,4-Dinitrotoluene	0.35*	nd	nd	nd	nd	nd	nd	nd
4-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd	nd
Dibenzofuran	1.0	nd	nd	nd	nd	nd	nd	nd
2,3,4,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd	nd
2,3,5,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd	nd
Fluorene	0.1	nd	nd	nd	nd	nd	nd	nd
4-Chlorophenylphenylether	1.0	nd	nd	nd	nd	nd	nd	nd
Diethylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
4-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd	nd
4,6-Dinitro-2-methylphenol	5.0	nd	nd	nd	nd	nd	nd	nd
N-nitrosodiphenylamine	1.0	nd	nd	nd	nd	nd	nd	nd
Azobenzene	1.0	nd	nd	nd	nd	nd	nd	nd
4-Bromophenylphenylether	1.0	nd	nd	nd	nd	nd	nd	nd
Hexachlorobenzene	0.45*	nd	nd	nd	nd	nd	nd	nd

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-4	RHS-DU-5	RHS-DU-6	RHS-DU-7	RHS-DU-8	RHS-DU-9	RHS-DU-10
Date extracted	Reporting	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14	02/10/14
Date analyzed	Limits	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Moisture, %	(mg/kg)	18%	14%	16%	22%	15%	9%	10%
Pentachlorophenol	1.0*	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.1	nd	nd	nd	nd	**0.12**	**0.13**	nd
Anthracene	0.1	nd	nd	nd	nd	nd	nd	nd
Carbazole	1.0	nd	nd	nd	nd	nd	nd	nd
Di-n-butylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Fluoranthene	0.1	nd	nd	**0.17**	**0.21**	**0.43**	**0.50**	**0.16**
Pyrene	0.1	**0.10**	nd	**0.17**	**0.23**	**0.42**	**0.50**	**0.18**
Butylbenzylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Bis(2-ethylhexyl) adipate	1.0	nd	nd	nd	nd	nd	nd	nd
Benzo(a)anthracene	0.1	nd	nd	nd	nd	**0.11**	**0.26**	nd
Chrysene	0.1	**0.12**	nd	**0.20**	**0.19**	**0.34**	**0.58**	**0.14**
Bis (2-ethylhexyl) phthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Di-n-octyl phthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.1	nd	nd	nd	nd	**0.12**	**0.33**	nd
Benzo(k)fluoranthene	0.1	nd	nd	nd	nd	**0.20**	**0.35**	nd
Benzo(a)pyrene	0.1	nd	nd	nd	nd	nd	**0.17**	nd
Dibenzo(a,h)anthracene	0.1	nd	nd	nd	nd	nd	nd	nd
Benzo(ghi)perylene	0.1	nd	nd	nd	nd	nd	**0.35**	nd
Indeno(1,2,3-cd)pyrene	0.1	nd	nd	nd	nd	nd	**0.35**	nd
Surrogate recoveries								
2-Fluorophenol		135%	128%	129%	142%	**156%	135%	138%
Phenol-d6		123%	118%	119%	138%	149%	132%	141%
Nitrobenzene-d5		116%	112%	121%	61%	68%	114%	63%
2-Fluorobiphenyl		143%	140%	147%	78%	86%	150%	75%
2,4,6-Tribromophenol		78%	69%	63%	85%	94%	91%	92%
4-Terphenyl-d14		107%	109%	111%	59%	68%	117%	60%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
* - method detection limit
** - The recovery for 2-Fluorophenol exceeded the control limits. No further action taken.

Acceptable Recovery limits:

2-Fluorophenol: 10-135 %
Phenol - d5: 10-135 %
Nitrobenzene - d5: 20-120 %
2-Flurobiphenyl: 50-150%
2,4,6- Tribromophenol: 29-159%
p-Terphenyl-d14: 50-150%

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-11	RHS-DU-12	RHS-DU-13	RHS-DU-14	RHS-DU-15	RHS-DU-16	RHS-DU-17
Date extracted	Reporting	02/10/14	02/10/14	02/12/14	02/12/14	02/12/14	02/12/14	02/11/14
Date analyzed	Limits	02/11/14	02/11/14	02/13/14	02/13/14	02/13/14	02/13/14	02/11/14
Moisture, %	(mg/kg)	15%	19%	12%	20%	14%	10%	13%
Pyridine	1.0	nd	nd	nd	nd	nd	nd	nd
Aniline	1.0	nd	nd	nd	nd	nd	nd	nd
Phenol	0.41*	nd	nd	nd	nd	nd	nd	nd
2-Chlorophenol	0.36*	nd	nd	nd	nd	nd	nd	nd
Bis (2-chloroethyl) ether	0.40*	nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.34*	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.26*	nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.38*	nd	nd	nd	nd	nd	nd	nd
Benzyl alcohol	1.0	nd	nd	nd	nd	nd	nd	nd
Hexacholorethane	0.39*	nd	nd	nd	nd	nd	nd	nd
N-Nitroso-di-n-propylamine	1.0	nd	nd	nd	nd	nd	nd	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd	nd	nd	nd	nd	nd	nd
2-Methylphenol (o-cresol)	1.0	nd	nd	nd	nd	nd	nd	nd
Bis (2-chloroisopropyl) ether	0.42*	nd	nd	nd	nd	nd	nd	nd
Nitrobenzene	0.41*	nd	nd	nd	nd	nd	nd	nd
Isophorone	0.41*	nd	nd	nd	nd	nd	nd	nd
2-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd	nd
2,4-Dimethylphenol	1.0	nd	nd	nd	nd	nd	nd	nd
Bis (2-chloroethoxy) methane	1.0	nd	nd	nd	nd	nd	nd	nd
2,4-Dichlorophenol	0.36*	nd	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.40*	nd	nd	nd	nd	nd	nd	nd
Naphthalene	1.0	nd	nd	nd	nd	nd	nd	nd
4-Chloroaniline	0.46*	nd	nd	nd	nd	nd	nd	nd
Hexachlorobutadiene	0.43*	nd	nd	nd	nd	nd	nd	nd
4-Chloro-3-methylphenol	5.0	nd	nd	nd	nd	nd	nd	nd
2-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd	nd
1-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd	nd
Hexachlorocyclopentadiene	1.0	nd	nd	nd	nd	nd	nd	nd
2,4,6-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd	nd
2,4,5-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd	nd
2-Chloronaphthalene	1.0	nd	nd	nd	nd	nd	nd	nd
2-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd	nd
1,4-Dinitrobenzene	5.0	nd	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.1	nd	nd	nd	nd	nd	nd	nd
1,3-Dinotrobenzene	0.28*	nd	nd	nd	nd	nd	nd	nd
Dimethylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
2,6-Dinitrotoluene	1.0	nd	nd	nd	nd	nd	nd	nd
1,2-Dinitrobenzene	1.0	nd	nd	nd	nd	nd	nd	nd
Acenaphthene	0.1	nd	nd	nd	nd	nd	nd	nd
3-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd	nd
2,4-Dinitrophenol	1.0*	nd	nd	nd	nd	nd	nd	nd
2,4-Dinitrotoluene	0.35*	nd	nd	nd	nd	nd	nd	nd
4-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd	nd
Dibenzofuran	1.0	nd	nd	nd	nd	nd	nd	nd
2,3,4,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd	nd
2,3,5,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd	nd
Fluorene	0.1	nd	nd	nd	nd	nd	nd	nd
4-Chlorophenylphenylether	1.0	nd	nd	nd	nd	nd	nd	nd
Diethylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
4-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd	nd
4,6-Dinitro-2-methylphenol	5.0	nd	nd	nd	nd	nd	nd	nd
N-nitrosodiphenylamine	1.0	nd	nd	nd	nd	nd	nd	nd
Azobenzene	1.0	nd	nd	nd	nd	nd	nd	nd
4-Bromophenylphenylether	1.0	nd	nd	nd	nd	nd	nd	nd
Hexachlorobenzene	0.45*	nd	nd	nd	nd	nd	nd	nd

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-11	RHS-DU-12	RHS-DU-13	RHS-DU-14	RHS-DU-15	RHS-DU-16	RHS-DU-17
Date extracted	Reporting	02/10/14	02/10/14	02/12/14	02/12/14	02/12/14	02/12/14	02/11/14
Date analyzed	Limits	02/11/14	02/11/14	02/13/14	02/13/14	02/13/14	02/13/14	02/11/14
Moisture, %	(mg/kg)	15%	19%	12%	20%	14%	10%	13%
Pentachlorophenol	1.0*	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.1	nd	nd	nd	nd	nd	nd	nd
Anthracene	0.1	nd	nd	nd	nd	nd	nd	nd
Carbazole	1.0	nd	nd	nd	nd	nd	nd	nd
Di-n-butylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Fluoranthene	0.1	**0.18**	**0.11**	nd	nd	nd	**0.10**	**0.13**
Pyrene	0.1	**0.23**	**0.14**	nd	nd	nd	**0.10**	**0.17**
Butylbenzylphthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Bis(2-ethylhexyl) adipate	1.0	nd	nd	nd	nd	nd	nd	nd
Benzo(a)anthracene	0.1	nd	nd	nd	nd	nd	nd	nd
Chrysene	0.1	**0.20**	**0.13**	nd	nd	nd	**0.10**	**0.16**
Bis (2-ethylhexyl) phthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Di-n-octyl phthalate	1.0	nd	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.1	nd	nd	nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.1	nd	nd	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.1	nd	nd	nd	nd	nd	nd	nd
Dibenzo(a,h)anthracene	0.1	nd	nd	nd	nd	nd	nd	nd
Benzo(ghi)perylene	0.1	nd	nd	nd	nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries								
2-Fluorophenol		141%	147%	120%	112%	114%	107%	110%
Phenol-d6		140%	147%	114%	92%	89%	76%	101%
Nitrobenzene-d5		115%	122%	111%	33%	24%	91%	111%
2-Fluorobiphenyl		142%	149%	140%	115%	121%	121%	134%
2,4,6-Tribromophenol		91%	97%	63%	53%	33%	28%	63%
4-Terphenyl-d14		118%	113%	107%	93%	84%	78%	112%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
* - method detection limit

Acceptable Recovery limits:
2-Fluorophenol: 10-135 %
Phenol - d5: 10-135 %
Nitrobenzene - d5: 20-120 %
2-Flurobiphenyl: 50-150%
2,4,6- Tribromophenol: 29-159%
p-Terphenyl-d14: 50-150%

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-17.2	RHS-DU-17.3	RHS-DU-18	RHS-DU-19	RHS-DU-20	RHS-DU-21
Date extracted	Reporting	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Date analyzed	Limits	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/12/14
Moisture, %	(mg/kg)	11%	11%	11%	9%	18%	14%
Pyridine	1.0	nd	nd	nd	nd	nd	nd
Aniline	1.0	nd	nd	nd	nd	nd	nd
Phenol	0.41*	nd	nd	nd	nd	nd	nd
2-Chlorophenol	0.36*	nd	nd	nd	nd	nd	nd
Bis (2-chloroethyl) ether	0.40*	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.34*	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.26*	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.38*	nd	nd	nd	nd	nd	nd
Benzyl alcohol	1.0	nd	nd	nd	nd	nd	nd
Hexacholorethane	0.39*	nd	nd	nd	nd	nd	nd
N-Nitroso-di-n-propylamine	1.0	nd	nd	nd	nd	nd	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd	nd	nd	nd	nd	nd
2-Methylphenol (o-cresol)	1.0	nd	nd	nd	nd	nd	nd
Bis (2-chloroisopropyl) ether	0.42*	nd	nd	nd	nd	nd	nd
Nitrobenzene	0.41*	nd	nd	nd	nd	nd	nd
Isophorone	0.41*	nd	nd	nd	nd	nd	nd
2-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd
2,4-Dimethylphenol	1.0	nd	nd	nd	nd	nd	nd
Bis (2-chloroethoxy) methane	1.0	nd	nd	nd	nd	nd	nd
2,4-Dichlorophenol	0.36*	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.40*	nd	nd	nd	nd	nd	nd
Naphthalene	1.0	nd	nd	nd	nd	nd	nd
4-Chloroaniline	0.46*	nd	nd	nd	nd	nd	nd
Hexachlorobutadiene	0.43*	nd	nd	nd	nd	nd	nd
4-Chloro-3-methylphenol	5.0	nd	nd	nd	nd	nd	nd
2-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd
1-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd
Hexachlorocyclopentadiene	1.0	nd	nd	nd	nd	nd	nd
2,4,6-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd
2,4,5-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd
2-Chloronaphthalene	1.0	nd	nd	nd	nd	nd	nd
2-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd
1,4-Dinitrobenzene	5.0	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.1	nd	nd	nd	nd	nd	nd
1,3-Dinotrobenzene	0.28*	nd	nd	nd	nd	nd	nd
Dimethylphthalate	1.0	nd	nd	nd	nd	nd	nd
2,6-Dinitrotoluene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dinitrobenzene	1.0	nd	nd	nd	nd	nd	nd
Acenaphthene	0.1	nd	nd	nd	nd	nd	nd
3-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd
2,4-Dinitrophenol	1.0*	nd	nd	nd	nd	nd	nd
2,4-Dinitrotoluene	0.35*	nd	nd	nd	nd	nd	nd
4-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd
Dibenzofuran	1.0	nd	nd	nd	nd	nd	nd
2,3,4,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd
2,3,5,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd
Fluorene	0.1	nd	nd	nd	nd	nd	nd
4-Chlorophenylphenylether	1.0	nd	nd	nd	nd	nd	nd
Diethylphthalate	1.0	nd	nd	nd	nd	nd	nd
4-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd
4,6-Dinitro-2-methylphenol	5.0	nd	nd	nd	nd	nd	nd
N-nitrosodiphenylamine	1.0	nd	nd	nd	nd	nd	nd
Azobenzene	1.0	nd	nd	nd	nd	nd	nd
4-Bromophenylphenylether	1.0	nd	nd	nd	nd	nd	nd
Hexachlorobenzene	0.45*	nd	nd	nd	nd	nd	nd

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-17.2	RHS-DU-17.3	RHS-DU-18	RHS-DU-19	RHS-DU-20	RHS-DU-21
Date extracted	Reporting	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Date analyzed	Limits	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/12/14
Moisture, %	(mg/kg)	11%	11%	11%	9%	18%	14%
Pentachlorophenol	1.0*	nd	nd	nd	nd	nd	nd
Phenanthrene	0.1	nd	**0.12**	nd	nd	nd	nd
Anthracene	0.1	nd	nd	nd	nd	nd	nd
Carbazole	1.0	nd	nd	nd	nd	nd	nd
Di-n-butylphthalate	1.0	nd	nd	nd	nd	nd	nd
Fluoranthene	0.1	**0.11**	**0.31**	**0.11**	nd	**0.22**	**0.15**
Pyrene	0.1	**0.14**	**0.33**	**0.12**	**0.12**	**0.20**	**0.16**
Butylbenzylphthalate	1.0	nd	nd	nd	nd	nd	nd
Bis(2-ethylhexyl) adipate	1.0	nd	nd	nd	nd	nd	nd
Benzo(a)anthracene	0.1	nd	**0.18**	nd	nd	nd	nd
Chrysene	0.1	**0.15**	**0.46**	**0.12**	**0.11**	**0.15**	**0.12**
Bis (2-ethylhexyl) phthalate	1.0	nd	nd	nd	nd	nd	nd
Di-n-octyl phthalate	1.0	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.1	nd	**0.40**	nd	nd	nd	nd
Benzo(k)fluoranthene	0.1	nd	**0.35**	nd	nd	nd	nd
Benzo(a)pyrene	0.1	nd	**0.43**	nd	nd	nd	nd
Dibenzo(a,h)anthracene	0.1	nd	nd	nd	nd	nd	nd
Benzo(ghi)perylene	0.1	nd	**0.38**	nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd	**0.40**	nd	nd	nd	nd
Surrogate recoveries							
2-Fluorophenol		106%	120%	110%	103%	110%	109%
Phenol-d6		97%	114%	104%	89%	107%	104%
Nitrobenzene-d5		107%	111%	95%	93%	92%	95%
2-Fluorobiphenyl		137%	140%	119%	117%	117%	119%
2,4,6-Tribromophenol		60%	63%	58%	47%	68%	68%
4-Terphenyl-d14		103%	107%	92%	80%	98%	94%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
* - method detection limit

Acceptable Recovery limits:
2-Fluorophenol: 10-135 %
Phenol - d5: 10-135 %
Nitrobenzene - d5: 20-120 %
2-Flurobiphenyl: 50-150%
2,4,6- Tribromophenol: 29-159%
p-Terphenyl-d14: 50-150%

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-22	RHS-DU-23	RHS-DU-24	RHS-DU-25	RHS-DU-26	RHS-DU-26.2
Date extracted	Reporting	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Date analyzed	Limits	02/12/14	02/12/14	02/12/14	02/12/14	02/12/14	02/12/14
Moisture, %	(mg/kg)	12%	13%	17%	18%	30%	20%
Pyridine	1.0	nd	nd	nd	nd	nd	nd
Aniline	1.0	nd	nd	nd	nd	nd	nd
Phenol	0.41*	nd	nd	nd	nd	nd	nd
2-Chlorophenol	0.36*	nd	nd	nd	nd	nd	nd
Bis (2-chloroethyl) ether	0.40*	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.34*	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.26*	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.38*	nd	nd	nd	nd	nd	nd
Benzyl alcohol	1.0	nd	nd	nd	nd	nd	nd
Hexacholorethane	0.39*	nd	nd	nd	nd	nd	nd
N-Nitroso-di-n-propylamine	1.0	nd	nd	nd	nd	nd	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd	nd	nd	nd	nd	nd
2-Methylphenol (o-cresol)	1.0	nd	nd	nd	nd	nd	nd
Bis (2-chloroisopropyl) ether	0.42*	nd	nd	nd	nd	nd	nd
Nitrobenzene	0.41*	nd	nd	nd	nd	nd	nd
Isophorone	0.41*	nd	nd	nd	nd	nd	nd
2-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd
2,4-Dimethylphenol	1.0	nd	nd	nd	nd	nd	nd
Bis (2-chloroethoxy) methane	1.0	nd	nd	nd	nd	nd	nd
2,4-Dichlorophenol	0.36*	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.40*	nd	nd	nd	nd	nd	nd
Naphthalene	1.0	nd	nd	nd	nd	nd	nd
4-Chloroaniline	0.46*	nd	nd	nd	nd	nd	nd
Hexachlorobutadiene	0.43*	nd	nd	nd	nd	nd	nd
4-Chloro-3-methylphenol	5.0	nd	nd	nd	nd	nd	nd
2-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd
1-Methylnapthalene	1.0	nd	nd	nd	nd	nd	nd
Hexachlorocyclopentadiene	1.0	nd	nd	nd	nd	nd	nd
2,4,6-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd
2,4,5-Trichlorophenol	5.0	nd	nd	nd	nd	nd	nd
2-Chloronaphthalene	1.0	nd	nd	nd	nd	nd	nd
2-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd
1,4-Dinitrobenzene	5.0	nd	nd	nd	nd	nd	nd
Acenaphthylene	0.1	nd	nd	nd	nd	nd	nd
1,3-Dinotrobenzene	0.28*	nd	nd	nd	nd	nd	nd
Dimethylphthalate	1.0	nd	nd	nd	nd	nd	nd
2,6-Dinitrotoluene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dinitrobenzene	1.0	nd	nd	nd	nd	nd	nd
Acenaphthene	0.1	nd	nd	nd	nd	nd	nd
3-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd
2,4-Dinitrophenol	1.0*	nd	nd	nd	nd	nd	nd
2,4-Dinitrotoluene	0.35*	nd	nd	nd	nd	nd	nd
4-Nitrophenol	5.0	nd	nd	nd	nd	nd	nd
Dibenzofuran	1.0	nd	nd	nd	nd	nd	nd
2,3,4,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd
2,3,5,6-Tetrachlorophenol	1.0	nd	nd	nd	nd	nd	nd
Fluorene	0.1	nd	nd	nd	nd	nd	nd
4-Chlorophenylphenylether	1.0	nd	nd	nd	nd	nd	nd
Diethylphthalate	1.0	nd	nd	nd	nd	nd	nd
4-Nitroaniline	5.0	nd	nd	nd	nd	nd	nd
4,6-Dinitro-2-methylphenol	5.0	nd	nd	nd	nd	nd	nd
N-nitrosodiphenylamine	1.0	nd	nd	nd	nd	nd	nd
Azobenzene	1.0	nd	nd	nd	nd	nd	nd
4-Bromophenylphenylether	1.0	nd	nd	nd	nd	nd	nd
Hexachlorobenzene	0.45*	nd	nd	nd	nd	nd	nd

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-22	RHS-DU-23	RHS-DU-24	RHS-DU-25	RHS-DU-26	RHS-DU-26.2
Date extracted	Reporting	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14
Date analyzed	Limits	02/12/14	02/12/14	02/12/14	02/12/14	02/12/14	02/12/14
Moisture, %	(mg/kg)	12%	13%	17%	18%	30%	20%
Pentachlorophenol	1.0*	nd	nd	nd	nd	nd	nd
Phenanthrene	0.1	**0.20**	**0.16**	nd	nd	nd	nd
Anthracene	0.1	nd	nd	nd	nd	nd	nd
Carbazole	1.0	nd	nd	nd	nd	nd	nd
Di-n-butylphthalate	1.0	nd	nd	nd	nd	nd	nd
Fluoranthene	0.1	**0.49**	**0.49**	**0.13**	**0.11**	nd	nd
Pyrene	0.1	**0.41**	**0.50**	**0.14**	**0.11**	nd	nd
Butylbenzylphthalate	1.0	nd	nd	nd	nd	nd	nd
Bis(2-ethylhexyl) adipate	1.0	nd	nd	nd	nd	nd	nd
Benzo(a)anthracene	0.1	nd	**0.16**	nd	nd	nd	nd
Chrysene	0.1	**0.40**	**0.48**	**0.21**	**0.11**	nd	nd
Bis (2-ethylhexyl) phthalate	1.0	nd	nd	nd	nd	nd	nd
Di-n-octyl phthalate	1.0	nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.1	nd	**0.31**	nd	nd	nd	nd
Benzo(k)fluoranthene	0.1	nd	**0.33**	nd	nd	nd	nd
Benzo(a)pyrene	0.1	nd	**0.15**	nd	nd	nd	nd
Dibenzo(a,h)anthracene	0.1	nd	nd	nd	nd	nd	nd
Benzo(ghi)perylene	0.1	nd	**0.44**	nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd	**0.38**	nd	nd	nd	nd
Surrogate recoveries							
2-Fluorophenol		105%	103%	108%	112%	112%	111%
Phenol-d6		86%	86%	91%	92%	96%	94%
Nitrobenzene-d5		32%	34%	36%	33%	35%	95%
2-Fluorobiphenyl		115%	118%	116%	115%	119%	116%
2,4,6-Tribromophenol		42%	49%	50%	53%	56%	60%
4-Terphenyl-d14		91%	89%	96%	93%	95%	94%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
* - method detection limit

Acceptable Recovery limits:
2-Fluorophenol: 10-135 %
Phenol - d5: 10-135 %
Nitrobenzene - d5: 20-120 %
2-Flurobiphenyl: 50-150%
2,4,6- Tribromophenol: 29-159%
p-Terphenyl-d14: 50-150%

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-26.3	RHS-DU-27	RHS-DU-28	RHS-DU-29	MS	MSD	RPD
Date extracted	Reporting	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	
Date analyzed	Limits	02/13/14	02/13/14	02/13/14	02/13/14	02/13/14	02/13/14	
Moisture, %	(mg/kg)	23%	27%	23%	21%			
Pyridine	1.0	nd	nd	nd	nd			
Aniline	1.0	nd	nd	nd	nd			
Phenol	0.41*	nd	nd	nd	nd	104%	82%	24%
2-Chlorophenol	0.36*	nd	nd	nd	nd	113%	92%	20%
Bis (2-chloroethyl) ether	0.40*	nd	nd	nd	nd			
1,3-Dichlorobenzene	0.34*	nd	nd	nd	nd			
1,4-Dichlorobenzene	0.26*	nd	nd	nd	nd	110%	91%	19%
1,2-Dichlorobenzene	0.38*	nd	nd	nd	nd			
Benzyl alcohol	1.0	nd	nd	nd	nd			
Hexacholorethane	0.39*	nd	nd	nd	nd			
N-Nitroso-di-n-propylamine	1.0	nd	nd	nd	nd	78%	66%	17%
3,4-Methylphenol (m,p-cresol)	1.0	nd	nd	nd	nd			
2-Methylphenol (o-cresol)	1.0	nd	nd	nd	nd			
Bis (2-chloroisopropyl) ether	0.42*	nd	nd	nd	nd			
Nitrobenzene	0.41*	nd	nd	nd	nd			
Isophorone	0.41*	nd	nd	nd	nd			
2-Nitrophenol	5.0	nd	nd	nd	nd			
2,4-Dimethylphenol	1.0	nd	nd	nd	nd			
Bis (2-chloroethoxy) methane	1.0	nd	nd	nd	nd			
2,4-Dichlorophenol	0.36*	nd	nd	nd	nd			
1,2,4-Trichlorobenzene	0.40*	nd	nd	nd	nd	107%	88%	19%
Naphthalene	1.0	nd	nd	nd	nd			
4-Chloroaniline	0.46*	nd	nd	nd	nd			
Hexachlorobutadiene	0.43*	nd	nd	nd	nd			
4-Chloro-3-methylphenol	5.0	nd	nd	nd	nd	89%	76%	16%
2-Methylnapthalene	1.0	nd	nd	nd	nd			
1-Methylnapthalene	1.0	nd	nd	nd	nd			
Hexachlorocyclopentadiene	1.0	nd	nd	nd	nd			
2,4,6-Trichlorophenol	5.0	nd	nd	nd	nd			
2,4,5-Trichlorophenol	5.0	nd	nd	nd	nd			
2-Chloronaphthalene	1.0	nd	nd	nd	nd			
2-Nitroaniline	5.0	nd	nd	nd	nd			
1,4-Dinitrobenzene	5.0	nd	nd	nd	nd			
Acenaphthylene	0.1	nd	nd	nd	nd			
1,3-Dinotrobenzene	0.28*	nd	nd	nd	nd			
Dimethylphthalate	1.0	nd	nd	nd	nd			
2,6-Dinitrotoluene	1.0	nd	nd	nd	nd			
1,2-Dinitrobenzene	1.0	nd	nd	nd	nd			
Acenaphthene	0.1	nd	nd	nd	nd	127%	102%	22%
3-Nitroaniline	5.0	nd	nd	nd	nd			
2,4-Dinitrophenol	1.0*	nd	nd	nd	nd			
2,4-Dinitrotoluene	0.35*	nd	nd	nd	nd	53%	51%	4%
4-Nitrophenol	5.0	nd	nd	nd	nd			
Dibenzofuran	1.0	nd	nd	nd	nd			
2,3,4,6-Tetrachlorophenol	1.0	nd	nd	nd	nd			
2,3,5,6-Tetrachlorophenol	1.0	nd	nd	nd	nd			
Fluorene	0.1	nd	nd	nd	nd			
4-Chlorophenylphenylether	1.0	nd	nd	nd	nd			
Diethylphthalate	1.0	nd	nd	nd	nd			
4-Nitroaniline	5.0	nd	nd	nd	nd			
4,6-Dinitro-2-methylphenol	5.0	nd	nd	nd	nd			
N-nitrosodiphenylamine	1.0	nd	nd	nd	nd			
Azobenzene	1.0	nd	nd	nd	nd			
4-Bromophenylphenylether	1.0	nd	nd	nd	nd			
Hexachlorobenzene	0.45*	nd	nd	nd	nd			

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas
BV-RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Semivolatile Organic Compounds in Soil by Method 8270

Analytical Results

		RHS-DU-26.3	RHS-DU-27	RHS-DU-28	RHS-DU-29	MS	MSD	RPD
Date extracted	Reporting	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	02/11/14	
Date analyzed	Limits	02/13/14	02/13/14	02/13/14	02/13/14	02/13/14	02/13/14	
Moisture, %	(mg/kg)	23%	27%	23%	21%			
Pentachlorophenol	1.0*	nd	nd	nd	nd			
Phenanthrene	0.1	nd	nd	nd	nd			
Anthracene	0.1	nd	nd	nd	nd			
Carbazole	1.0	nd	nd	nd	nd			
Di-n-butylphthalate	1.0	nd	nd	nd	nd			
Fluoranthene	0.1	nd	nd	**0.11**	**0.10**			
Pyrene	0.1	nd	nd	**0.10**	**0.10**	94%	82%	14%
Butylbenzylphthalate	1.0	nd	nd	nd	nd			
Bis(2-ethylhexyl) adipate	1.0	nd	nd	nd	nd			
Benzo(a)anthracene	0.1	nd	nd	nd	nd			
Chrysene	0.1	nd	nd	**0.10**	**0.14**			
Bis (2-ethylhexyl) phthalate	1.0	nd	nd	nd	nd			
Di-n-octyl phthalate	1.0	nd	nd	nd	nd			
Benzo(b)fluoranthene	0.1	nd	nd	nd	nd			
Benzo(k)fluoranthene	0.1	nd	nd	nd	nd			
Benzo(a)pyrene	0.1	nd	nd	nd	nd			
Dibenzo(a,h)anthracene	0.1	nd	nd	nd	nd			
Benzo(ghi)perylene	0.1	nd	nd	nd	nd			
Indeno(1,2,3-cd)pyrene	0.1	nd	nd	nd	nd			
Surrogate recoveries								
2-Fluorophenol		109%	108%	110%	106%	104%	103%	
Phenol-d6		87%	88%	86%	89%	97%	98%	
Nitrobenzene-d5		22%	20%	20%	22%	96%	95%	
2-Fluorobiphenyl		114%	110%	117%	112%	109%	107%	
2,4,6-Tribromophenol		39%	42%	39%	43%	42%	46%	
4-Terphenyl-d14		79%	82%	80%	79%	72%	74%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
* - method detection limit

Acceptable Recovery limits:
2-Fluorophenol: 10-135 %
Phenol - d5: 10-135 %
Nitrobenzene - d5: 20-120 %
2-Flurobiphenyl: 50-150%
2,4,6- Tribromophenol: 29-159%
p-Terphenyl-d14: 50-150%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

Bureau Veritas North America, Inc.
RADFORD HIGH SCHOOL PROJECT
Client Project #17012-012148.48
ESN Project #D1402050037
Hawaii

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Total Metals in Soil by EPA-6020 Series

Sample Number	Date Analyzed	Lead (Pb) (mg/kg)	Cadmium (Cd) (mg/kg)	Chromium (Cr) (mg/kg)	Arsenic (As) (mg/kg)	Silver (Ag) (mg/kg)	Barium (Ba) (mg/kg)	Selenium (Se) (mg/kg)	Mercury (Hg) (mg/kg)
Method Blank	2/10/2014	nd	nd	nd	nd	nd	nd	nd	nd
RHS-DU-1	2/11/2014	**4800**	**14****	**300***	**35****	nd	**1200**	nd	**5.2**
RHS-DU-1 Duplicate	2/11/2014	**5200**	**12****	**350***	**33****	nd	**1100**	nd	**4.9**
RHS-DU-1.2	2/11/2014	**5800**	**14****	**230***	**38****	nd	**1100**	nd	**11**
RHS-DU-1.3	2/11/2014	**15000**	**26****	**310***	**28****	nd	**1100**	nd	**18**
RHS-DU-2	2/11/2014	**1600**	**5.9****	**150***	**11****	nd	**550**	nd	**15**
RHS-DU-3	2/12/2014	**85**	nd	**160**	**6.0**	nd	**410**	nd	**5.7**
RHS-DU-4	2/12/2014	**140**	nd	**170**	**7.5**	nd	**460**	nd	**3.5**
RHS-DU-5	2/10/2014	**61**	nd	**180**	**6.1**	nd	**280**	nd	**2.9**
RHS-DU-6	2/10/2014	**66**	nd	**240**	**7.6**	nd	**200**	nd	**3.3**
RHS-DU-7	2/10/2014	**190**	**1.0**	**230**	**7.3**	nd	**280**	nd	**6.1**
RHS-DU-8	2/10/2014	**260**	**1.3**	**170**	**6.8**	nd	**320**	nd	**21**
RHS-DU-9	2/12/2014	**660**	**1.6****	**110***	**8.7****	nd	**320**	nd	**18**
RHS-DU-10	2/10/2014	**490**	**1.7**	**180**	**12**	nd	**370**	nd	**23**
RHS-DU-10 Duplicate	2/10/2014	**420**	**2.2**	**180**	**11**	nd	**320**	nd	**22**
RHS-DU-11	2/10/2014	**1000**	**3.7**	**200**	**19**	nd	**522**	nd	**68**
RHS-DU-12	2/10/2014	**1300**	**7.1**	**210**	**23**	nd	**670**	nd	**57**
RHS-DU-13	2/10/2014	**2800**	**6.8**	**240**	**19**	nd	**740**	nd	**23**
RHS-DU-14	2/10/2014	**240**	nd	**220**	**12**	nd	**260**	nd	**8.2**
RHS-DU-15	2/10/2014	**360**	**1.4**	**190**	**15**	nd	**270**	nd	**14**
RHS-DU-16	2/10/2014	**95**	nd	**150**	**5.4**	nd	**220**	nd	**5.0**
RHS-DU-17	2/12/2014	**1100**	**4.5****	**210***	**23****	nd	**590**	nd	**73**
RHS-DU-17.2	2/10/2014	**1600**	**4.6**	**220**	**24**	nd	**720**	nd	**66**
RHS-DU-17.3	2/12/2014	**1600**	**6.4****	**150***	**26****	nd	**670**	nd	**83**
RHS-DU-18	2/12/2014	**6200**	**11****	**170***	**26****	nd	**710**	nd	**45**
RHS-DU-19	2/12/2014	**2300**	**7.8****	**160***	**26****	nd	**610**	nd	**45**
RHS-DU-20	2/10/2014	**120**	nd	**190**	**6.4**	nd	**290**	nd	**18**
RHS-DU-21	2/10/2014	**2300**	**12**	**240**	**18**	nd	**810**	nd	**20**
RHS-DU-22	2/12/2014	**110**	nd	**130**	**6.9**	nd	**320**	nd	**18**
RHS-DU-23	2/12/2014	**500**	**1.9**	**150**	**18**	nd	**340**	nd	**200**
RHS-DU-24	2/10/2014	**110**	nd	**140**	**5.1**	nd	**270**	nd	**4.8**
RHS-DU-25	2/10/2014	**120**	nd	**190**	**5.8**	nd	**280**	nd	**4.4**
RHS-DU-26	2/13/2001	**89**	nd	**250***	**5.3**	nd	**100**	nd	**3.5**
RHS-DU-26.2	2/13/2014	**50**	nd	**220***	nd	nd	**69**	nd	**2.7**
RHS-DU-26.3	2/13/2014	**78**	nd	**190***	**6.2**	nd	**85**	nd	**2.9**
RHS-DU-27	2/13/2014	**59**	nd	**230***	**6.3**	nd	**85**	nd	**2.9**
RHS-DU-27 Duplicate	2/13/2014	**39**	nd	**220***	**5.5**	nd	**78**	nd	**2.8**
RHS-DU-28	2/13/2014	**44**	nd	**250***	**4.6**	nd	**91**	nd	**3.1**
RHS-DU-29	2/13/2014	**68**	nd	**270***	**5.7**	nd	**99**	nd	**5.1**
Reporting Limits		5.0	1.0	5.0	5.0	20	50	20	0.5

nd - not detected at listed reporting limits
* The Continuing Calibration standard failed low. The samples were reanalyzed with similar results.
** The Continuing Calibration standard failed high. The samples were reanalyzed with similar results.

QA/QC Data - Total Metals EPA-6020

Sample Number: RHS-DU-27

	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	(%)
Lead	70.2	67.1	95.6	71.2	77.6	109	13.1
Cadmium	70.2	54.5	77.6M	71.2	58.3	81.9	5.32
Chromium	70.2	109	155M	71.2	101	142M	9.0
Arsenic	70.2	58.3	83.0	71.2	62.6	87.9	5.70
Silver	70.2	45.4	64.7M	71.2	48.9	68.7M	6.01
Barium	70.2	84.9	121M	71.2	108	152M	22.6
Selenium	70.2	52.2	74.4M	71.2	55.0	77.2M	3.81
Mercury	7.02	6.06	86.3	7.12	6.97	97.9	12.6

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Lead	100	101	101
Cadmium	100	97.5	97.5
Chromium	100	102	102
Arsenic	100	103	103
Silver	100	85.8	85.8
Barium	100	99.1	99.1
Selenium	100	101	101
Mercury	10	10.6	106

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%
ACCEPTABLE RPD IS 35%
M - Matrix Spike recovery failed due to matrix interference.

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Karen Carvallo
ESN Pacific
2020-B Kahai Street
Honolulu HI 96819

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Prepared Date:
March 3, 2014

Report Information:

Pace Project #: 10257346
Sample Receipt Date: 02/11/2014
Client Project #: D1402050037
Client Sub PO #: N/A
State Cert #: SLD

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

March 04, 2014

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

ACCREDITED IN ACCORDANCE WITH nelac

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on eighteen samples submitted by a representative of ESN Pacific. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were based on signal-to-noise measurements.

The results provided in this report include lower-bound, mid-bound, and upper-bound toxic equivalence (TEQ) results. Lower bound TEQ results include only contributions from positive values in the sample. Mid-bound TEQ results include one-half of the reporting limit in cases where an analyte was not detected, along with contributions from positives in the sample. Upper-bound TEQ results include the full reporting limit in cases where an analyte was not detected, along with contributions from positives in the sample.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 40-107%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained or "P" where polychlorinated diphenyl ethers were present. Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of selected congeners. These levels were below the calibration range of the method. The levels reported for the affected congeners in the field samples were higher than the corresponding blank levels by one or more orders of magnitude. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

Laboratory and matrix spike samples were also prepared with the sample batches using clean sand or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds in the laboratory spike samples were recovered at 89-128% with relative percent differences (RPDs) of 0.0-7.5%. These results indicate high degrees of accuracy and precision for these determinations. Several recovery values obtained for the native congeners in the matrix spike samples were outside of the 70-130% target range due to the levels of these congeners in the sample material. The RPD values obtained for the matrix spike analyses ranged from 0.2-5.1%. Matrix spikes were not prepared with the 02/24/2014 sample batch.

The responses obtained for selected native and labeled congeners in calibration standard analyses U140226B_20 and P140301A_15 were outside the target ranges. As specified in the method, the averages of the daily response factors for these compounds were used in the calculations for the samples

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

from these runshifts. The affected values were flagged "Y" on the results tables.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Minnesota	027-053-137
Alabama	40770	Mississippi	MN00064
Alaska	MN00064	Montana	92
Arizona	AZ0014	Nebraska	
Arkansas	88-0680	Nevada	MN_00064_200
California	01155CA	New Jersey (NE	MN002
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 8	8TMS-Q	North Dakota	R-036
Florida (NELAP	E87605	Ohio	4150
Georgia (DNR)	959	Oklahoma	D9922
Guam	959	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN300001-001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Puerto Rico	MN00064
Indiana	C-MN-01	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia	9952C
Maryland	322	Wisconsin	999407970
Michigan	9909	Wyoming	8TMS-Q

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

ESN PACIFIC'S CHAIN-OF-CUSTODY RECORD

10257346

CLIENT:_ESN Pacific

ADDRESS:_2020-B Kahai St Honolulu, HI 96819

PHONE:__8088470067 FAX:__8088470917

EMAIL:_esn@esnpacific.com

CLIENT PROJECT #: Project Manager:__K. Carvallo

TAT : 10-day

DATE:___2-7-14 PAGE ___1___ OF ___2___

ESN PROJECT #__D1402050037

LOCATION/PROJECT NAME:__BV - Radford High School

COLLECTOR: DATE COLLECTED:___2/4-2/5

	Sample ID#	Date	Time	Sample Type	Container Type	Dioxins/Furans 8290	Comments	# of Containers
1	RHS-DU-1	2/4	1525	soil		X	10257346001	1
2	RHS-DU-1.2	2/5	933			X	002	1
3	RHS-DU-1.3	2/5	1030			X	003	1
4	RHS-DU-2	2/4	1500			X	004	1
5	RHS-DU-3	2/4	1403			X	005	1
6	RHS-DU-4	2/4	1145			X	006	1
7	RHS-DU-5	2/4	1220			X	007	1
8	RHS-DU-6	2/4	1402			X	008	1
9	RHS-DU-7	2/4	1131			X	009	1
10	RHS-DU-8	2/4	1424			X	010	1
11	RHS-DU-9	2/4	1455			X	011	1
12	RHS-DU-10	2/5	915			X	012	1
13	RHS-DU-11	2/5	900			X	013	1
14	RHS-DU-12	2/5	945			X	014	1
15	RHS-DU-13	2/5	945			X	015	1
16	RHS-DU-14	2/4	1252			X	016	1
17	RHS-DU-15	2/4	1345			X	017	1
18	RHS-DU-16	2/4	1411			X	018	1
							Last Entry	
20								

RELINQUISHED BY:(Signature) DATE/TIME
Kaw Carvallo
K. Carvallo via FedEx/ESN NW 2/7/14 1500

RECEIVED BY (Signature) DATE/TIME T= 2.4
Alissa Pece 2/14/14 907

RELINQUISHED BY:(Signature) DATE/TIME

RECEIVED BY (Signature) DATE/TIME

SAMPLE RECEIPT:

TOTAL # OF CONTAINERS____18 (of 35)_____

COC SEALS Y / N / NA

SEALS INTACT Y / N / NA

RECEIVED TEMP:_____

LABORATORY NOTES:

Samples MI prepped at ESN Pacific

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 07Nov2013 Page 1 of 1
	Document No.: F-MN-L-213-rev.08	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: TSN Pacifics

Project #: WO#: 10257346

10257346

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 1Z V23 U3F 13 9904 0443

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermom. Used: ☐ 80512447 ☐ 72337080 ☒ B88A912167504 ☒ B88A9132521491 **Type of Ice:** ☐ Wet ☒ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.4 **Cooler Temp Corrected (°C):** 2.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** TRUE **Date and Initials of Person Examining Contents:** CMB 2/11/14

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☐ Yes	☒ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☒ No	☐ N/A	12. No date/time on samples
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☐ Yes	☐ No	☒ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 02/11/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-1		
Lab Sample ID	10257346001-S		
Filename	U140226B_14		
Injected By	BAL		
Total Amount Extracted	10.1 g	Matrix	Soil
% Moisture	5.2	Dilution	NA
Dry Weight Extracted	9.57 g	Collected	02/04/2014 15:25
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 03:40

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	460	-----	0.91	E	2,3,7,8-TCDF-13C	2.00	88	Y
Total TCDF	13000	-----	0.91	E	2,3,7,8-TCDD-13C	2.00	89	
					1,2,3,7,8-PeCDF-13C	2.00	95	Y
2,3,7,8-TCDD	29	-----	0.16	Y	2,3,4,7,8-PeCDF-13C	2.00	94	Y
Total TCDD	1500	-----	0.16	Y	1,2,3,7,8-PeCDD-13C	2.00	96	Y
					1,2,3,4,7,8-HxCDF-13C	2.00	97	
1,2,3,7,8-PeCDF	360	-----	0.86		1,2,3,6,7,8-HxCDF-13C	2.00	97	
2,3,4,7,8-PeCDF	-----	800	0.60	P	2,3,4,6,7,8-HxCDF-13C	2.00	99	
Total PeCDF	9100	-----	0.73		1,2,3,7,8,9-HxCDF-13C	2.00	91	
					1,2,3,4,7,8-HxCDD-13C	2.00	81	
1,2,3,7,8-PeCDD	110	-----	0.46		1,2,3,6,7,8-HxCDD-13C	2.00	76	
Total PeCDD	1800	-----	0.46		1,2,3,4,6,7,8-HpCDF-13C	2.00	73	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	67	
1,2,3,4,7,8-HxCDF	610	-----	0.56		1,2,3,4,6,7,8-HpCDD-13C	2.00	63	
1,2,3,6,7,8-HxCDF	-----	540	0.53	P	OCDD-13C	4.00	70	
2,3,4,6,7,8-HxCDF	750	-----	0.59					
1,2,3,7,8,9-HxCDF	100	-----	0.56		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	6100	-----	0.56	E	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	91	-----	0.84		2,3,7,8-TCDD-37Cl4	0.20	96	
1,2,3,6,7,8-HxCDD	170	-----	0.45					
1,2,3,7,8,9-HxCDD	130	-----	0.40					
Total HxCDD	2200	-----	0.56					
1,2,3,4,6,7,8-HpCDF	2500	-----	0.46	E	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	130	-----	0.38		Equivalence: 710 ng/Kg			
Total HpCDF	3100	-----	0.42	E	(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	840	-----	0.53					
Total HpCDD	1700	-----	0.53					
OCDF	910	-----	0.35	Y				
OCDD	2400	-----	0.21					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-1		
Lab Sample ID	10257346001-S		
Filename	U140226B_14		
Injected By	BAL		
Total Amount Extracted	10.1 g	Matrix	Soil
% Moisture	5.2	Dilution	NA
Dry Weight Extracted	9.57 g	Collected	02/04/2014 15:25
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 03:40

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	460	0.91	0.10000	46.1804	46.1804	46.1804
Total TCDF	13000	0.91	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	29	0.16	1.00000	29.2299	29.2299	29.2299
Total TCDD	1500	0.16	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	360	0.86	0.03000	10.8854	10.8854	10.8854
2,3,4,7,8-PeCDF	ND	0.60	0.30000	239.3679	239.3679	239.3679
Total PeCDF	9100	0.73	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	110	0.46	1.00000	113.0036	113.0036	113.0036
Total PeCDD	1800	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	610	0.56	0.10000	61.0951	61.0951	61.0951
1,2,3,6,7,8-HxCDF	ND	0.53	0.10000	54.4034	54.4034	54.4034
2,3,4,6,7,8-HxCDF	750	0.59	0.10000	74.5342	74.5342	74.5342
1,2,3,7,8,9-HxCDF	100	0.56	0.10000	10.1314	10.1314	10.1314
Total HxCDF	6100	0.56	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	91	0.84	0.10000	9.1338	9.1338	9.1338
1,2,3,6,7,8-HxCDD	170	0.45	0.10000	17.2408	17.2408	17.2408
1,2,3,7,8,9-HxCDD	130	0.40	0.10000	13.3970	13.3970	13.3970
Total HxCDD	2200	0.56	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	2500	0.46	0.01000	25.1529	25.1529	25.1529
1,2,3,4,7,8,9-HpCDF	130	0.38	0.01000	1.2781	1.2781	1.2781
Total HpCDF	3100	0.42	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	840	0.53	0.01000	8.4056	8.4056	8.4056
Total HpCDD	1700	0.53	0.00000	0.0000	0.0000	0.0000
OCDF	910	0.35	0.00030	0.2722	0.2722	0.2722
OCDD	2400	0.21	0.00030	0.7093	0.7093	0.7093
				710 ng/Kg	**710 ng/Kg**	**710 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-1.2		
Lab Sample ID	10257346002-S		
Filename	P140301A_06		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	8.5	Dilution	NA
Dry Weight Extracted	9.33 g	Collected	02/05/2014 09:33
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 10:46

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	630	-----	0.15	E	2,3,7,8-TCDF-13C	2.00	73	
Total TCDF	17000	-----	0.15	E	2,3,7,8-TCDD-13C	2.00	77	
					1,2,3,7,8-PeCDF-13C	2.00	71	
2,3,7,8-TCDD	38	-----	0.14		2,3,4,7,8-PeCDF-13C	2.00	69	
Total TCDD	1700	-----	0.14		1,2,3,7,8-PeCDD-13C	2.00	71	
					1,2,3,4,7,8-HxCDF-13C	2.00	85	
1,2,3,7,8-PeCDF	470	-----	0.43		1,2,3,6,7,8-HxCDF-13C	2.00	84	
2,3,4,7,8-PeCDF	970	-----	1.40		2,3,4,6,7,8-HxCDF-13C	2.00	81	
Total PeCDF	11000	-----	0.92		1,2,3,7,8,9-HxCDF-13C	2.00	79	
					1,2,3,4,7,8-HxCDD-13C	2.00	78	
1,2,3,7,8-PeCDD	120	-----	0.44		1,2,3,6,7,8-HxCDD-13C	2.00	67	
Total PeCDD	2000	-----	0.44		1,2,3,4,6,7,8-HpCDF-13C	2.00	74	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	71	
1,2,3,4,7,8-HxCDF	870	-----	1.10		1,2,3,4,6,7,8-HpCDD-13C	2.00	76	
1,2,3,6,7,8-HxCDF	740	-----	1.40		OCDD-13C	4.00	79	Y
2,3,4,6,7,8-HxCDF	1000	-----	0.82					
1,2,3,7,8,9-HxCDF	120	-----	0.68		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	8700	-----	1.00	E	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	110	-----	0.54		2,3,7,8-TCDD-37Cl4	0.20	79	
1,2,3,6,7,8-HxCDD	200	-----	0.72					
1,2,3,7,8,9-HxCDD	150	-----	0.83					
Total HxCDD	2700	-----	0.70					
1,2,3,4,6,7,8-HpCDF	3200	-----	0.66	E	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	100	-----	0.81		Equivalence: 890 ng/Kg			
Total HpCDF	3900	-----	0.73	E	(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	850	-----	0.22					
Total HpCDD	1800	-----	0.22					
OCDF	560	-----	0.27					
OCDD	1900	-----	0.23					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-1.2		
Lab Sample ID	10257346002-S		
Filename	P140301A_06		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	8.5	Dilution	NA
Dry Weight Extracted	9.33 g	Collected	02/05/2014 09:33
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 10:46

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	630	0.15	0.10000	63.0003	63.0003	63.0003
Total TCDF	17000	0.15	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	38	0.14	1.00000	38.2979	38.2979	38.2979
Total TCDD	1700	0.14	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	470	0.43	0.03000	14.1460	14.1460	14.1460
2,3,4,7,8-PeCDF	970	1.4	0.30000	290.7745	290.7745	290.7745
Total PeCDF	11000	0.92	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	120	0.44	1.00000	117.8814	117.8814	117.8814
Total PeCDD	2000	0.44	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	870	1.1	0.10000	87.2673	87.2673	87.2673
1,2,3,6,7,8-HxCDF	740	1.4	0.10000	74.0624	74.0624	74.0624
2,3,4,6,7,8-HxCDF	1000	0.82	0.10000	101.9369	101.9369	101.9369
1,2,3,7,8,9-HxCDF	120	0.68	0.10000	12.1000	12.1000	12.1000
Total HxCDF	8700	1.0	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	110	0.54	0.10000	10.6051	10.6051	10.6051
1,2,3,6,7,8-HxCDD	200	0.72	0.10000	19.9110	19.9110	19.9110
1,2,3,7,8,9-HxCDD	150	0.83	0.10000	15.4994	15.4994	15.4994
Total HxCDD	2700	0.70	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	3200	0.66	0.01000	32.3356	32.3356	32.3356
1,2,3,4,7,8,9-HpCDF	100	0.81	0.01000	1.0486	1.0486	1.0486
Total HpCDF	3900	0.73	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	850	0.22	0.01000	8.4969	8.4969	8.4969
Total HpCDD	1800	0.22	0.00000	0.0000	0.0000	0.0000
OCDF	560	0.27	0.00030	0.1688	0.1688	0.1688
OCDD	1900	0.23	0.00030	0.5720	0.5720	0.5720
				890 ng/Kg	**890 ng/Kg**	**890 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-1.3		
Lab Sample ID	10257346003-S		
Filename	P140228B_04		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	9.6	Dilution	NA
Dry Weight Extracted	9.40 g	Collected	02/05/2014 10:30
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 19:47

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	2700	0.40	PE	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	57000	-----	0.40	E	2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	140	-----	0.66		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	5700	-----	0.66	E	1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	1700	-----	0.75		1,2,3,6,7,8-HxCDF-13C	2.00	77
2,3,4,7,8-PeCDF	3800	-----	2.80	E	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	38000	-----	1.80	E	1,2,3,7,8,9-HxCDF-13C	2.00	73
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	340	-----	1.10		1,2,3,6,7,8-HxCDD-13C	2.00	65
Total PeCDD	5500	-----	1.10		1,2,3,4,6,7,8-HpCDF-13C	2.00	73
					1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	2300	-----	1.10	E	1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	2000	-----	2.60		OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	2600	-----	1.80	E			
1,2,3,7,8,9-HxCDF	310	-----	2.00		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	23000	-----	1.90	E	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	260	-----	1.40		2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	410	-----	1.50				
1,2,3,7,8,9-HxCDD	370	-----	1.50				
Total HxCDD	6200	-----	1.50	E			
1,2,3,4,6,7,8-HpCDF	7700	-----	1.20	E	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	270	-----	1.60		Equivalence: 2900 ng/Kg		
Total HpCDF	9400	-----	1.40	E	(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	2100	-----	0.50	E			
Total HpCDD	4600	-----	0.50	E			
OCDF	1500	-----	0.52				
OCDD	5100	-----	0.42	E			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-1.3		
Lab Sample ID	10257346003-S		
Filename	P140228B_04		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	9.6	Dilution	NA
Dry Weight Extracted	9.40 g	Collected	02/05/2014 10:30
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 19:47

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	ND	0.40	0.10000	266.4271	266.4271	266.4271
Total TCDF	57000	0.40	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	140	0.66	1.00000	140.4906	140.4906	140.4906
Total TCDD	5700	0.66	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	1700	0.75	0.03000	51.8696	51.8696	51.8696
2,3,4,7,8-PeCDF	3800	2.8	0.30000	1150.0767	1150.0767	1150.0767
Total PeCDF	38000	1.8	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	340	1.1	1.00000	344.9645	344.9645	344.9645
Total PeCDD	5500	1.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	2300	1.1	0.10000	225.4365	225.4365	225.4365
1,2,3,6,7,8-HxCDF	2000	2.6	0.10000	196.5160	196.5160	196.5160
2,3,4,6,7,8-HxCDF	2600	1.8	0.10000	264.4692	264.4692	264.4692
1,2,3,7,8,9-HxCDF	310	2.0	0.10000	30.7299	30.7299	30.7299
Total HxCDF	23000	1.9	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	260	1.4	0.10000	25.8999	25.8999	25.8999
1,2,3,6,7,8-HxCDD	410	1.5	0.10000	41.2923	41.2923	41.2923
1,2,3,7,8,9-HxCDD	370	1.5	0.10000	36.6176	36.6176	36.6176
Total HxCDD	6200	1.5	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	7700	1.2	0.01000	77.4586	77.4586	77.4586
1,2,3,4,7,8,9-HpCDF	270	1.6	0.01000	2.7123	2.7123	2.7123
Total HpCDF	9400	1.4	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	2100	0.50	0.01000	21.3697	21.3697	21.3697
Total HpCDD	4600	0.50	0.00000	0.0000	0.0000	0.0000
OCDF	1500	0.52	0.00030	0.4615	0.4615	0.4615
OCDD	5100	0.42	0.00030	1.5290	1.5290	1.5290
				2900 ng/Kg	**2900 ng/Kg**	**2900 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-2		
Lab Sample ID	10257346004-S		
Filename	P140228B_05		
Injected By	BAL		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	9.2	Dilution	NA
Dry Weight Extracted	9.53 g	Collected	02/04/2014 15:00
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 20:30

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	230	-----	1.20		2,3,7,8-TCDF-13C	2.00	71
Total TCDF	5800	-----	1.20	E	2,3,7,8-TCDD-13C	2.00	80
					1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	16	-----	0.70		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	480	-----	0.70		1,2,3,7,8-PeCDD-13C	2.00	71
					1,2,3,4,7,8-HxCDF-13C	2.00	84
1,2,3,7,8-PeCDF	170	-----	3.30		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	330	-----	3.10		2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	3600	-----	3.20		1,2,3,7,8,9-HxCDF-13C	2.00	73
					1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	43	-----	1.40		1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	540	-----	1.40		1,2,3,4,6,7,8-HpCDF-13C	2.00	70
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	220	-----	2.70		1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	210	-----	1.50		OCDD-13C	4.00	52
2,3,4,6,7,8-HxCDF	270	-----	1.70				
1,2,3,7,8,9-HxCDF	44	-----	2.70		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2400	-----	2.20	E	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	34	-----	0.98		2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	68	-----	1.10				
1,2,3,7,8,9-HxCDD	53	-----	0.90				
Total HxCDD	820	-----	0.98				
1,2,3,4,6,7,8-HpCDF	710	-----	0.96		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	39	-----	1.60		Equivalence: 290 ng/Kg		
Total HpCDF	1000	-----	1.30		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	590	-----	2.40				
Total HpCDD	1200	-----	2.40				
OCDF	330	-----	2.30				
OCDD	3700	-----	4.50				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-2		
Lab Sample ID	10257346004-S		
Filename	P140228B_05		
Injected By	BAL		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	9.2	Dilution	NA
Dry Weight Extracted	9.53 g	Collected	02/04/2014 15:00
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 20:30

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	230	1.2	0.10000	22.7176	22.7176	22.7176
Total TCDF	5800	1.2	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	16	0.70	1.00000	16.4296	16.4296	16.4296
Total TCDD	480	0.70	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	170	3.3	0.03000	5.1067	5.1067	5.1067
2,3,4,7,8-PeCDF	330	3.1	0.30000	97.9930	97.9930	97.9930
Total PeCDF	3600	3.2	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	43	1.4	1.00000	42.7471	42.7471	42.7471
Total PeCDD	540	1.4	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	220	2.7	0.10000	21.9228	21.9228	21.9228
1,2,3,6,7,8-HxCDF	210	1.5	0.10000	20.8312	20.8312	20.8312
2,3,4,6,7,8-HxCDF	270	1.7	0.10000	27.3254	27.3254	27.3254
1,2,3,7,8,9-HxCDF	44	2.7	0.10000	4.4244	4.4244	4.4244
Total HxCDF	2400	2.2	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	34	0.98	0.10000	3.3965	3.3965	3.3965
1,2,3,6,7,8-HxCDD	68	1.1	0.10000	6.7560	6.7560	6.7560
1,2,3,7,8,9-HxCDD	53	0.90	0.10000	5.3329	5.3329	5.3329
Total HxCDD	820	0.98	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	710	0.96	0.01000	7.1142	7.1142	7.1142
1,2,3,4,7,8,9-HpCDF	39	1.6	0.01000	0.3860	0.3860	0.3860
Total HpCDF	1000	1.3	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	590	2.4	0.01000	5.8672	5.8672	5.8672
Total HpCDD	1200	2.4	0.00000	0.0000	0.0000	0.0000
OCDF	330	2.3	0.00030	0.0998	0.0998	0.0998
OCDD	3700	4.5	0.00030	1.1246	1.1246	1.1246
				290 ng/Kg	**290 ng/Kg**	**290 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-3		
Lab Sample ID	10257346005-S		
Filename	P140228B_06		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	10.8	Dilution	NA
Dry Weight Extracted	9.19 g	Collected	02/04/2014 14:03
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 21:13

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	7.90	-----	1.10		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	180.00	-----	1.10		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	0.75	-----	0.63	J	2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	15.00	-----	0.63		1,2,3,7,8-PeCDD-13C	2.00	71
					1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	7.60	-----	0.87		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	21.00	-----	0.80		2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	230.00	-----	0.83		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	2.50	-----	0.90	J	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	22.00	-----	0.90		1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	69
1,2,3,4,7,8-HxCDF	15.00	-----	0.80		1,2,3,4,6,7,8-HpCDD-13C	2.00	73
1,2,3,6,7,8-HxCDF	-----	26	0.71	P	OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	20.00	-----	0.75				
1,2,3,7,8,9-HxCDF	3.20	-----	0.99	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	240.00	-----	0.82		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	4.90	-----	0.91	J	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	12.00	-----	1.00				
1,2,3,7,8,9-HxCDD	7.80	-----	0.94				
Total HxCDD	110.00	-----	0.96				
1,2,3,4,6,7,8-HpCDF	110.00	-----	0.83		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	5.70	-----	1.10		Equivalence: 25 ng/Kg		
Total HpCDF	310.00	-----	0.98		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	290.00	-----	1.70				
Total HpCDD	570.00	-----	1.70				
OCDF	250.00	-----	0.89				
OCDD	4100.00	-----	1.20				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-3		
Lab Sample ID	10257346005-S		
Filename	P140228B_06		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	10.8	Dilution	NA
Dry Weight Extracted	9.19 g	Collected	02/04/2014 14:03
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 21:13

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	7.90	1.1	0.10000	0.7872	0.7872	0.7872
Total TCDF	180.00	1.1	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	0.75	0.63	1.00000	0.7474	0.7474	0.7474
Total TCDD	15.00	0.63	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	7.60	0.87	0.03000	0.2293	0.2293	0.2293
2,3,4,7,8-PeCDF	21.00	0.80	0.30000	6.2023	6.2023	6.2023
Total PeCDF	230.00	0.83	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	2.50	0.90	1.00000	2.4729	2.4729	2.4729
Total PeCDD	22.00	0.90	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	15.00	0.80	0.10000	1.4750	1.4750	1.4750
1,2,3,6,7,8-HxCDF	ND	0.71	0.10000	2.6405	2.6405	2.6405
2,3,4,6,7,8-HxCDF	20.00	0.75	0.10000	1.9850	1.9850	1.9850
1,2,3,7,8,9-HxCDF	3.20	0.99	0.10000	0.3170	0.3170	0.3170
Total HxCDF	240.00	0.82	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	4.90	0.91	0.10000	0.4950	0.4950	0.4950
1,2,3,6,7,8-HxCDD	12.00	1.0	0.10000	1.2189	1.2189	1.2189
1,2,3,7,8,9-HxCDD	7.80	0.94	0.10000	0.7800	0.7800	0.7800
Total HxCDD	110.00	0.96	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	110.00	0.83	0.01000	1.1335	1.1335	1.1335
1,2,3,4,7,8,9-HpCDF	5.70	1.1	0.01000	0.0565	0.0565	0.0565
Total HpCDF	310.00	0.98	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	290.00	1.7	0.01000	2.8638	2.8638	2.8638
Total HpCDD	570.00	1.7	0.00000	0.0000	0.0000	0.0000
OCDF	250.00	0.89	0.00030	0.0764	0.0764	0.0764
OCDD	4100.00	1.2	0.00030	1.2196	1.2196	1.2196
				25 ng/Kg	**25 ng/Kg**	**25 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-4		
Lab Sample ID	10257346006-S		
Filename	P140228B_07		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	16.0	Dilution	NA
Dry Weight Extracted	8.74 g	Collected	02/04/2014 11:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 21:56

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	16.00	-----	0.15		2,3,7,8-TCDF-13C	2.00	70
Total TCDF	410.00	-----	0.15		2,3,7,8-TCDD-13C	2.00	78
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	0.99	-----	0.19	J	2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	37.00	-----	0.19		1,2,3,7,8-PeCDD-13C	2.00	69
					1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	13.00	-----	0.45		1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	26.00	-----	0.33		2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	310.00	-----	0.39		1,2,3,7,8,9-HxCDF-13C	2.00	67
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	4.30	-----	0.46	J	1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	57.00	-----	0.46		1,2,3,4,6,7,8-HpCDF-13C	2.00	67
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	22.00	-----	0.25		1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	20.00	-----	0.21		OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	29.00	-----	0.22				
1,2,3,7,8,9-HxCDF	3.90	-----	0.28	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	310.00	-----	0.24		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	5.40	-----	0.28	J	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	31.00	-----	0.28				
1,2,3,7,8,9-HxCDD	17.00	-----	0.24				
Total HxCDD	240.00	-----	0.27				
1,2,3,4,6,7,8-HpCDF	170.00	-----	0.26		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	7.50	-----	0.35		Equivalence: 35 ng/Kg		
Total HpCDF	370.00	-----	0.31		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	360.00	-----	0.83				
Total HpCDD	700.00	-----	0.83				
OCDF	310.00	-----	0.54				
OCDD	3400.00	-----	1.70				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-4		
Lab Sample ID	10257346006-S		
Filename	P140228B_07		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	16.0	Dilution	NA
Dry Weight Extracted	8.74 g	Collected	02/04/2014 11:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 21:56

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	16.00	0.15	0.10000	1.6233	1.6233	1.6233
Total TCDF	410.00	0.15	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	0.99	0.19	1.00000	0.9907	0.9907	0.9907
Total TCDD	37.00	0.19	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	13.00	0.45	0.03000	0.3785	0.3785	0.3785
2,3,4,7,8-PeCDF	26.00	0.33	0.30000	7.9467	7.9467	7.9467
Total PeCDF	310.00	0.39	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	4.30	0.46	1.00000	4.3193	4.3193	4.3193
Total PeCDD	57.00	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	22.00	0.25	0.10000	2.2258	2.2258	2.2258
1,2,3,6,7,8-HxCDF	20.00	0.21	0.10000	2.0104	2.0104	2.0104
2,3,4,6,7,8-HxCDF	29.00	0.22	0.10000	2.8826	2.8826	2.8826
1,2,3,7,8,9-HxCDF	3.90	0.28	0.10000	0.3949	0.3949	0.3949
Total HxCDF	310.00	0.24	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	5.40	0.28	0.10000	0.5421	0.5421	0.5421
1,2,3,6,7,8-HxCDD	31.00	0.28	0.10000	3.1137	3.1137	3.1137
1,2,3,7,8,9-HxCDD	17.00	0.24	0.10000	1.7111	1.7111	1.7111
Total HxCDD	240.00	0.27	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	170.00	0.26	0.01000	1.6818	1.6818	1.6818
1,2,3,4,7,8,9-HpCDF	7.50	0.35	0.01000	0.0753	0.0753	0.0753
Total HpCDF	370.00	0.31	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	360.00	0.83	0.01000	3.5904	3.5904	3.5904
Total HpCDD	700.00	0.83	0.00000	0.0000	0.0000	0.0000
OCDF	310.00	0.54	0.00030	0.0922	0.0922	0.0922
OCDD	3400.00	1.7	0.00030	1.0149	1.0149	1.0149
				35 ng/Kg	**35 ng/Kg**	**35 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-5		
Lab Sample ID	10257346007-S		
Filename	P140228B_08		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	13.3	Dilution	NA
Dry Weight Extracted	8.93 g	Collected	02/04/2014 12:20
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 22:38

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	10.00	-----	0.11		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	210.00	-----	0.11		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	0.78	-----	0.15	J	2,3,4,7,8-PeCDF-13C	2.00	69
Total TCDD	24.00	-----	0.15		1,2,3,7,8-PeCDD-13C	2.00	75
					1,2,3,4,7,8-HxCDF-13C	2.00	88
1,2,3,7,8-PeCDF	10.00	-----	0.18		1,2,3,6,7,8-HxCDF-13C	2.00	87
2,3,4,7,8-PeCDF	22.00	-----	0.19		2,3,4,6,7,8-HxCDF-13C	2.00	81
Total PeCDF	250.00	-----	0.18		1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	4.10	-----	0.14	J	1,2,3,6,7,8-HxCDD-13C	2.00	67
Total PeCDD	51.00	-----	0.14		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	22.00	-----	0.29		1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	25.00	-----	0.26		OCDD-13C	4.00	54
2,3,4,6,7,8-HxCDF	29.00	-----	0.24				
1,2,3,7,8,9-HxCDF	3.80	-----	0.37	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	350.00	-----	0.29		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	6.50	-----	0.26		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	22.00	-----	0.28				
1,2,3,7,8,9-HxCDD	14.00	-----	0.22				
Total HxCDD	190.00	-----	0.25				
1,2,3,4,6,7,8-HpCDF	210.00	-----	0.26		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	8.90	-----	0.33		Equivalence: 33 ng/Kg		
Total HpCDF	510.00	-----	0.29		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	460.00	-----	0.77				
Total HpCDD	890.00	-----	0.77				
OCDF	430.00	-----	0.32				
OCDD	4200.00	-----	0.27				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-5		
Lab Sample ID	10257346007-S		
Filename	P140228B_08		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	13.3	Dilution	NA
Dry Weight Extracted	8.93 g	Collected	02/04/2014 12:20
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 22:38

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	10.00	0.11	0.10000	1.0134	1.0134	1.0134
Total TCDF	210.00	0.11	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	0.78	0.15	1.00000	0.7805	0.7805	0.7805
Total TCDD	24.00	0.15	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	10.00	0.18	0.03000	0.3104	0.3104	0.3104
2,3,4,7,8-PeCDF	22.00	0.19	0.30000	6.6764	6.6764	6.6764
Total PeCDF	250.00	0.18	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	4.10	0.14	1.00000	4.0811	4.0811	4.0811
Total PeCDD	51.00	0.14	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	22.00	0.29	0.10000	2.1995	2.1995	2.1995
1,2,3,6,7,8-HxCDF	25.00	0.26	0.10000	2.5369	2.5369	2.5369
2,3,4,6,7,8-HxCDF	29.00	0.24	0.10000	2.9204	2.9204	2.9204
1,2,3,7,8,9-HxCDF	3.80	0.37	0.10000	0.3819	0.3819	0.3819
Total HxCDF	350.00	0.29	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	6.50	0.26	0.10000	0.6510	0.6510	0.6510
1,2,3,6,7,8-HxCDD	22.00	0.28	0.10000	2.1999	2.1999	2.1999
1,2,3,7,8,9-HxCDD	14.00	0.22	0.10000	1.3581	1.3581	1.3581
Total HxCDD	190.00	0.25	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	210.00	0.26	0.01000	2.0881	2.0881	2.0881
1,2,3,4,7,8,9-HpCDF	8.90	0.33	0.01000	0.0887	0.0887	0.0887
Total HpCDF	510.00	0.29	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	460.00	0.77	0.01000	4.5638	4.5638	4.5638
Total HpCDD	890.00	0.77	0.00000	0.0000	0.0000	0.0000
OCDF	430.00	0.32	0.00030	0.1277	0.1277	0.1277
OCDD	4200.00	0.27	0.00030	1.2722	1.2722	1.2722
				33 ng/Kg	**33 ng/Kg**	**33 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-6		
Lab Sample ID	10257346008-S		
Filename	U140226B_15		
Injected By	BAL		
Total Amount Extracted	10.1 g	Matrix	Soil
% Moisture	14.3	Dilution	NA
Dry Weight Extracted	8.66 g	Collected	02/04/2014 14:02
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 04:27

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	22.0	-----	0.560		2,3,7,8-TCDF-13C	2.00	82	Y
Total TCDF	600.0	-----	0.560		2,3,7,8-TCDD-13C	2.00	88	
					1,2,3,7,8-PeCDF-13C	2.00	89	Y
2,3,7,8-TCDD	1.4	-----	0.098	Y	2,3,4,7,8-PeCDF-13C	2.00	86	Y
Total TCDD	55.0	-----	0.098	Y	1,2,3,7,8-PeCDD-13C	2.00	87	Y
					1,2,3,4,7,8-HxCDF-13C	2.00	100	
1,2,3,7,8-PeCDF	22.0	-----	0.270		1,2,3,6,7,8-HxCDF-13C	2.00	103	
2,3,4,7,8-PeCDF	46.0	-----	0.230		2,3,4,6,7,8-HxCDF-13C	2.00	97	
Total PeCDF	570.0	-----	0.250		1,2,3,7,8,9-HxCDF-13C	2.00	91	
					1,2,3,4,7,8-HxCDD-13C	2.00	81	
1,2,3,7,8-PeCDD	9.3	-----	0.240		1,2,3,6,7,8-HxCDD-13C	2.00	75	
Total PeCDD	120.0	-----	0.240		1,2,3,4,6,7,8-HpCDF-13C	2.00	64	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	60	
1,2,3,4,7,8-HxCDF	42.0	-----	0.280		1,2,3,4,6,7,8-HpCDD-13C	2.00	59	
1,2,3,6,7,8-HxCDF	-----	43	0.200	P	OCDD-13C	4.00	67	
2,3,4,6,7,8-HxCDF	56.0	-----	0.240					
1,2,3,7,8,9-HxCDF	8.8	-----	0.440		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	500.0	-----	0.290		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	13.0	-----	0.460		2,3,7,8-TCDD-37Cl4	0.20	96	
1,2,3,6,7,8-HxCDD	42.0	-----	0.580					
1,2,3,7,8,9-HxCDD	27.0	-----	0.600					
Total HxCDD	390.0	-----	0.550					
1,2,3,4,6,7,8-HpCDF	240.0	-----	0.200		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	16.0	-----	0.400		Equivalence: 63 ng/Kg			
Total HpCDF	630.0	-----	0.300		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	740.0	-----	0.140					
Total HpCDD	1400.0	-----	0.140					
OCDF	570.0	-----	0.460	Y				
OCDD	6400.0	-----	0.440					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-6		
Lab Sample ID	10257346008-S		
Filename	U140226B_15		
Injected By	BAL		
Total Amount Extracted	10.1 g	Matrix	Soil
% Moisture	14.3	Dilution	NA
Dry Weight Extracted	8.66 g	Collected	02/04/2014 14:02
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 04:27

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	22.0	0.56	0.10000	2.2016	2.2016	2.2016
Total TCDF	600.0	0.56	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	1.4	0.098	1.00000	1.4168	1.4168	1.4168
Total TCDD	55.0	0.098	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	22.0	0.27	0.03000	0.6533	0.6533	0.6533
2,3,4,7,8-PeCDF	46.0	0.23	0.30000	13.8748	13.8748	13.8748
Total PeCDF	570.0	0.25	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	9.3	0.24	1.00000	9.3190	9.3190	9.3190
Total PeCDD	120.0	0.24	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	42.0	0.28	0.10000	4.1906	4.1906	4.1906
1,2,3,6,7,8-HxCDF	ND	0.20	0.10000	4.2820	4.2820	4.2820
2,3,4,6,7,8-HxCDF	56.0	0.24	0.10000	5.5569	5.5569	5.5569
1,2,3,7,8,9-HxCDF	8.8	0.44	0.10000	0.8820	0.8820	0.8820
Total HxCDF	500.0	0.29	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	13.0	0.46	0.10000	1.2841	1.2841	1.2841
1,2,3,6,7,8-HxCDD	42.0	0.58	0.10000	4.2335	4.2335	4.2335
1,2,3,7,8,9-HxCDD	27.0	0.60	0.10000	2.6887	2.6887	2.6887
Total HxCDD	390.0	0.55	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	240.0	0.20	0.01000	2.4353	2.4353	2.4353
1,2,3,4,7,8,9-HpCDF	16.0	0.40	0.01000	0.1649	0.1649	0.1649
Total HpCDF	630.0	0.30	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	740.0	0.14	0.01000	7.4428	7.4428	7.4428
Total HpCDD	1400.0	0.14	0.00000	0.0000	0.0000	0.0000
OCDF	570.0	0.46	0.00030	0.1702	0.1702	0.1702
OCDD	6400.0	0.44	0.00030	1.9249	1.9249	1.9249
				63 ng/Kg	**63 ng/Kg**	**63 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-7		
Lab Sample ID	10257346009-S		
Filename	P140228B_09		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	10.2	Dilution	NA
Dry Weight Extracted	9.16 g	Collected	02/04/2014 11:31
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 23:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	42.0	-----	0.17	2,3,7,8-TCDF-13C	2.00	72
Total TCDF	1100.0	-----	0.17	2,3,7,8-TCDD-13C	2.00	80
				1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	2.6	-----	0.21	2,3,4,7,8-PeCDF-13C	2.00	67
Total TCDD	100.0	-----	0.21	1,2,3,7,8-PeCDD-13C	2.00	72
				1,2,3,4,7,8-HxCDF-13C	2.00	85
1,2,3,7,8-PeCDF	46.0	-----	0.26	1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	98.0	-----	0.55	2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	1100.0	-----	0.40	1,2,3,7,8,9-HxCDF-13C	2.00	49
				1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	15.0	-----	0.25	1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	200.0	-----	0.25	1,2,3,4,6,7,8-HpCDF-13C	2.00	68
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	100.0	-----	0.50	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	88.0	-----	0.54	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	130.0	-----	0.46			
1,2,3,7,8,9-HxCDF	18.0	-----	0.47	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1300.0	-----	0.49	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	19.0	-----	0.44	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	55.0	-----	0.47			
1,2,3,7,8,9-HxCDD	36.0	-----	0.45			
Total HxCDD	600.0	-----	0.45			
1,2,3,4,6,7,8-HpCDF	600.0	-----	0.42	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	25.0	-----	0.45	Equivalence: 110 ng/Kg		
Total HpCDF	1000.0	-----	0.43	(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	800.0	-----	0.96			
Total HpCDD	1700.0	-----	0.96			
OCDF	570.0	-----	0.46			
OCDD	6300.0	-----	2.10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-7		
Lab Sample ID	10257346009-S		
Filename	P140228B_09		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	10.2	Dilution	NA
Dry Weight Extracted	9.16 g	Collected	02/04/2014 11:31
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	02/28/2014 23:21

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	42.0	0.17	0.10000	4.2120	4.2120	4.2120
Total TCDF	1100.0	0.17	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	2.6	0.21	1.00000	2.5779	2.5779	2.5779
Total TCDD	100.0	0.21	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	46.0	0.26	0.03000	1.3924	1.3924	1.3924
2,3,4,7,8-PeCDF	98.0	0.55	0.30000	29.4800	29.4800	29.4800
Total PeCDF	1100.0	0.40	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	15.0	0.25	1.00000	14.6872	14.6872	14.6872
Total PeCDD	200.0	0.25	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	100.0	0.50	0.10000	10.2795	10.2795	10.2795
1,2,3,6,7,8-HxCDF	88.0	0.54	0.10000	8.7543	8.7543	8.7543
2,3,4,6,7,8-HxCDF	130.0	0.46	0.10000	13.1480	13.1480	13.1480
1,2,3,7,8,9-HxCDF	18.0	0.47	0.10000	1.8134	1.8134	1.8134
Total HxCDF	1300.0	0.49	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	19.0	0.44	0.10000	1.9415	1.9415	1.9415
1,2,3,6,7,8-HxCDD	55.0	0.47	0.10000	5.5172	5.5172	5.5172
1,2,3,7,8,9-HxCDD	36.0	0.45	0.10000	3.5872	3.5872	3.5872
Total HxCDD	600.0	0.45	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	600.0	0.42	0.01000	6.0332	6.0332	6.0332
1,2,3,4,7,8,9-HpCDF	25.0	0.45	0.01000	0.2528	0.2528	0.2528
Total HpCDF	1000.0	0.43	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	800.0	0.96	0.01000	8.0212	8.0212	8.0212
Total HpCDD	1700.0	0.96	0.00000	0.0000	0.0000	0.0000
OCDF	570.0	0.46	0.00030	0.1720	0.1720	0.1720
OCDD	6300.0	2.1	0.00030	1.8777	1.8777	1.8777
				110 ng/Kg	**110 ng/Kg**	**110 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-8		
Lab Sample ID	10257346010-S		
Filename	P140228B_10		
Injected By	BAL		
Total Amount Extracted	10.7 g	Matrix	Soil
% Moisture	12.6	Dilution	NA
Dry Weight Extracted	9.35 g	Collected	02/04/2014 14:24
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 00:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	73.0	-----	0.18	2,3,7,8-TCDF-13C	2.00	75
Total TCDF	1800.0	-----	0.18	2,3,7,8-TCDD-13C	2.00	82
				1,2,3,7,8-PeCDF-13C	2.00	76
2,3,7,8-TCDD	3.9	-----	0.19	2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	170.0	-----	0.19	1,2,3,7,8-PeCDD-13C	2.00	77
				1,2,3,4,7,8-HxCDF-13C	2.00	107
1,2,3,7,8-PeCDF	73.0	-----	0.21	1,2,3,6,7,8-HxCDF-13C	2.00	90
2,3,4,7,8-PeCDF	160.0	-----	0.23	2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	1600.0	-----	0.22	1,2,3,7,8,9-HxCDF-13C	2.00	45
				1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	20.0	-----	0.24	1,2,3,6,7,8-HxCDD-13C	2.00	70
Total PeCDD	290.0	-----	0.24	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
				1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	130.0	-----	0.49	1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	130.0	-----	0.39	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	200.0	-----	0.44			
1,2,3,7,8,9-HxCDF	27.0	-----	0.53	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1700.0	-----	0.46	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	26.0	-----	0.52	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	61.0	-----	0.42			
1,2,3,7,8,9-HxCDD	42.0	-----	0.31			
Total HxCDD	770.0	-----	0.42			
1,2,3,4,6,7,8-HpCDF	690.0	-----	0.43	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	32.0	-----	0.25	Equivalence: 160 ng/Kg		
Total HpCDF	1000.0	-----	0.34	(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	640.0	-----	0.88			
Total HpCDD	1300.0	-----	0.88			
OCDF	370.0	-----	0.50			
OCDD	4100.0	-----	1.50			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-8		
Lab Sample ID	10257346010-S		
Filename	P140228B_10		
Injected By	BAL		
Total Amount Extracted	10.7 g	Matrix	Soil
% Moisture	12.6	Dilution	NA
Dry Weight Extracted	9.35 g	Collected	02/04/2014 14:24
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 00:04

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	73.0	0.18	0.10000	7.3131	7.3131	7.3131
Total TCDF	1800.0	0.18	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	3.9	0.19	1.00000	3.8969	3.8969	3.8969
Total TCDD	170.0	0.19	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	73.0	0.21	0.03000	2.2024	2.2024	2.2024
2,3,4,7,8-PeCDF	160.0	0.23	0.30000	46.9959	46.9959	46.9959
Total PeCDF	1600.0	0.22	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	20.0	0.24	1.00000	20.2905	20.2905	20.2905
Total PeCDD	290.0	0.24	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	130.0	0.49	0.10000	12.5722	12.5722	12.5722
1,2,3,6,7,8-HxCDF	130.0	0.39	0.10000	13.0742	13.0742	13.0742
2,3,4,6,7,8-HxCDF	200.0	0.44	0.10000	19.7418	19.7418	19.7418
1,2,3,7,8,9-HxCDF	27.0	0.53	0.10000	2.7032	2.7032	2.7032
Total HxCDF	1700.0	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	26.0	0.52	0.10000	2.5672	2.5672	2.5672
1,2,3,6,7,8-HxCDD	61.0	0.42	0.10000	6.0860	6.0860	6.0860
1,2,3,7,8,9-HxCDD	42.0	0.31	0.10000	4.2065	4.2065	4.2065
Total HxCDD	770.0	0.42	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	690.0	0.43	0.01000	6.8828	6.8828	6.8828
1,2,3,4,7,8,9-HpCDF	32.0	0.25	0.01000	0.3223	0.3223	0.3223
Total HpCDF	1000.0	0.34	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	640.0	0.88	0.01000	6.3833	6.3833	6.3833
Total HpCDD	1300.0	0.88	0.00000	0.0000	0.0000	0.0000
OCDF	370.0	0.50	0.00030	0.1096	0.1096	0.1096
OCDD	4100.0	1.5	0.00030	1.2413	1.2413	1.2413
				160 ng/Kg	**160 ng/Kg**	**160 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-9		
Lab Sample ID	10257346011-S		
Filename	P140228B_11		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	7.7	Dilution	NA
Dry Weight Extracted	9.41 g	Collected	02/04/2014 14:55
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 00:47

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	130.0	-----	0.29		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	3400.0	-----	0.29	E	2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	8.7	-----	0.30		2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	340.0	-----	0.30		1,2,3,7,8-PeCDD-13C	2.00	70
					1,2,3,4,7,8-HxCDF-13C	2.00	97
1,2,3,7,8-PeCDF	130.0	-----	0.41		1,2,3,6,7,8-HxCDF-13C	2.00	92
2,3,4,7,8-PeCDF	290.0	-----	0.52		2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	3200.0	-----	0.46		1,2,3,7,8,9-HxCDF-13C	2.00	57
					1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	36.0	-----	0.52		1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	620.0	-----	0.52		1,2,3,4,6,7,8-HpCDF-13C	2.00	67
					1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	290.0	-----	0.94		1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	210.0	-----	0.78		OCDD-13C	4.00	48
2,3,4,6,7,8-HxCDF	390.0	-----	1.30				
1,2,3,7,8,9-HxCDF	56.0	-----	1.20		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3200.0	-----	1.10		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	47.0	-----	0.80		2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	100.0	-----	0.89				
1,2,3,7,8,9-HxCDD	75.0	-----	0.88				
Total HxCDD	1400.0	-----	0.86				
1,2,3,4,6,7,8-HpCDF	1400.0	-----	0.69		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	61.0	-----	0.71		Equivalence: 290 ng/Kg		
Total HpCDF	1900.0	-----	0.70		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	920.0	-----	1.10				
Total HpCDD	1900.0	-----	1.10				
OCDF	490.0	-----	0.63				
OCDD	4500.0	-----	1.40				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-9		
Lab Sample ID	10257346011-S		
Filename	P140228B_11		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	7.7	Dilution	NA
Dry Weight Extracted	9.41 g	Collected	02/04/2014 14:55
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 00:47

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	130.0	0.29	0.10000	12.7166	12.7166	12.7166
Total TCDF	3400.0	0.29	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	8.7	0.30	1.00000	8.6543	8.6543	8.6543
Total TCDD	340.0	0.30	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	130.0	0.41	0.03000	4.0015	4.0015	4.0015
2,3,4,7,8-PeCDF	290.0	0.52	0.30000	87.8277	87.8277	87.8277
Total PeCDF	3200.0	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	36.0	0.52	1.00000	36.0399	36.0399	36.0399
Total PeCDD	620.0	0.52	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	290.0	0.94	0.10000	28.6286	28.6286	28.6286
1,2,3,6,7,8-HxCDF	210.0	0.78	0.10000	21.0516	21.0516	21.0516
2,3,4,6,7,8-HxCDF	390.0	1.3	0.10000	38.6524	38.6524	38.6524
1,2,3,7,8,9-HxCDF	56.0	1.2	0.10000	5.5926	5.5926	5.5926
Total HxCDF	3200.0	1.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	47.0	0.80	0.10000	4.6681	4.6681	4.6681
1,2,3,6,7,8-HxCDD	100.0	0.89	0.10000	10.3913	10.3913	10.3913
1,2,3,7,8,9-HxCDD	75.0	0.88	0.10000	7.5209	7.5209	7.5209
Total HxCDD	1400.0	0.86	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	1400.0	0.69	0.01000	14.2588	14.2588	14.2588
1,2,3,4,7,8,9-HpCDF	61.0	0.71	0.01000	0.6129	0.6129	0.6129
Total HpCDF	1900.0	0.70	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	920.0	1.1	0.01000	9.2390	9.2390	9.2390
Total HpCDD	1900.0	1.1	0.00000	0.0000	0.0000	0.0000
OCDF	490.0	0.63	0.00030	0.1458	0.1458	0.1458
OCDD	4500.0	1.4	0.00030	1.3427	1.3427	1.3427
				290 ng/Kg	**290 ng/Kg**	**290 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-10		
Lab Sample ID	10257346012-S		
Filename	P140228B_12		
Injected By	BAL		
Total Amount Extracted	10.8 g	Matrix	Soil
% Moisture	8.3	Dilution	NA
Dry Weight Extracted	9.90 g	Collected	02/05/2014 09:15
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 01:30

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	54.0	-----	0.21	2,3,7,8-TCDF-13C	2.00	68
Total TCDF	1300.0	-----	0.21	2,3,7,8-TCDD-13C	2.00	72
				1,2,3,7,8-PeCDF-13C	2.00	69
2,3,7,8-TCDD	3.0	-----	0.21	2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	120.0	-----	0.21	1,2,3,7,8-PeCDD-13C	2.00	70
				1,2,3,4,7,8-HxCDF-13C	2.00	86
1,2,3,7,8-PeCDF	57.0	-----	0.31	1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	110.0	-----	0.46	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	1200.0	-----	0.38	1,2,3,7,8,9-HxCDF-13C	2.00	51
				1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	14.0	-----	0.32	1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD	190.0	-----	0.32	1,2,3,4,6,7,8-HpCDF-13C	2.00	63
				1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	93.0	-----	0.41	1,2,3,4,6,7,8-HpCDD-13C	2.00	61
1,2,3,6,7,8-HxCDF	79.0	-----	0.42	OCDD-13C	4.00	40
2,3,4,6,7,8-HxCDF	120.0	-----	0.45			
1,2,3,7,8,9-HxCDF	17.0	-----	0.54	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1100.0	-----	0.46	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	19.0	-----	0.26	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	49.0	-----	0.36			
1,2,3,7,8,9-HxCDD	37.0	-----	0.61			
Total HxCDD	550.0	-----	0.41			
1,2,3,4,6,7,8-HpCDF	440.0	-----	0.32	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	20.0	-----	0.41	Equivalence: 110 ng/Kg		
Total HpCDF	720.0	-----	0.37	(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	920.0	-----	0.97			
Total HpCDD	1900.0	-----	0.97			
OCDF	430.0	-----	0.46			
OCDD	5700.0	-----	0.48			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-10		
Lab Sample ID	10257346012-S		
Filename	P140228B_12		
Injected By	BAL		
Total Amount Extracted	10.8 g	Matrix	Soil
% Moisture	8.3	Dilution	NA
Dry Weight Extracted	9.90 g	Collected	02/05/2014 09:15
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 01:30

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	54.0	0.21	0.10000	5.3519	5.3519	5.3519
Total TCDF	1300.0	0.21	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	3.0	0.21	1.00000	2.9992	2.9992	2.9992
Total TCDD	120.0	0.21	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	57.0	0.31	0.03000	1.6989	1.6989	1.6989
2,3,4,7,8-PeCDF	110.0	0.46	0.30000	31.8489	31.8489	31.8489
Total PeCDF	1200.0	0.38	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	14.0	0.32	1.00000	14.4344	14.4344	14.4344
Total PeCDD	190.0	0.32	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	93.0	0.41	0.10000	9.2541	9.2541	9.2541
1,2,3,6,7,8-HxCDF	79.0	0.42	0.10000	7.8939	7.8939	7.8939
2,3,4,6,7,8-HxCDF	120.0	0.45	0.10000	11.5691	11.5691	11.5691
1,2,3,7,8,9-HxCDF	17.0	0.54	0.10000	1.6940	1.6940	1.6940
Total HxCDF	1100.0	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	19.0	0.26	0.10000	1.8932	1.8932	1.8932
1,2,3,6,7,8-HxCDD	49.0	0.36	0.10000	4.8812	4.8812	4.8812
1,2,3,7,8,9-HxCDD	37.0	0.61	0.10000	3.6766	3.6766	3.6766
Total HxCDD	550.0	0.41	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	440.0	0.32	0.01000	4.4471	4.4471	4.4471
1,2,3,4,7,8,9-HpCDF	20.0	0.41	0.01000	0.1967	0.1967	0.1967
Total HpCDF	720.0	0.37	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	920.0	0.97	0.01000	9.2161	9.2161	9.2161
Total HpCDD	1900.0	0.97	0.00000	0.0000	0.0000	0.0000
OCDF	430.0	0.46	0.00030	0.1299	0.1299	0.1299
OCDD	5700.0	0.48	0.00030	1.7155	1.7155	1.7155
				110 ng/Kg	**110 ng/Kg**	**110 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-11		
Lab Sample ID	10257346013-S		
Filename	P140228B_13		
Injected By	BAL		
Total Amount Extracted	10.6 g	Matrix	Soil
% Moisture	12.2	Dilution	NA
Dry Weight Extracted	9.31 g	Collected	02/05/2014 09:00
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 02:12

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	140	-----	0.31		2,3,7,8-TCDF-13C	2.00	76
Total TCDF	3200	-----	0.31	E	2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	-----	7.2	0.24	I	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	250	-----	0.24		1,2,3,7,8-PeCDD-13C	2.00	74
					1,2,3,4,7,8-HxCDF-13C	2.00	101
1,2,3,7,8-PeCDF	120	-----	0.64		1,2,3,6,7,8-HxCDF-13C	2.00	94
2,3,4,7,8-PeCDF	240	-----	0.46		2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	2800	-----	0.55		1,2,3,7,8,9-HxCDF-13C	2.00	59
					1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	26	-----	0.36		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	390	-----	0.36		1,2,3,4,6,7,8-HpCDF-13C	2.00	69
					1,2,3,4,7,8,9-HpCDF-13C	2.00	62
1,2,3,4,7,8-HxCDF	200	-----	0.63		1,2,3,4,6,7,8-HpCDD-13C	2.00	68
1,2,3,6,7,8-HxCDF	160	-----	0.77		OCDD-13C	4.00	43
2,3,4,6,7,8-HxCDF	250	-----	0.83				
1,2,3,7,8,9-HxCDF	34	-----	0.77		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2200	-----	0.75		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	28	-----	0.53		2,3,7,8-TCDD-37Cl4	0.20	117
1,2,3,6,7,8-HxCDD	62	-----	0.60				
1,2,3,7,8,9-HxCDD	48	-----	0.54				
Total HxCDD	810	-----	0.56				
1,2,3,4,6,7,8-HpCDF	870	-----	0.55		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	37	-----	0.96		Equivalence: 220 ng/Kg		
Total HpCDF	1300	-----	0.75		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	920	-----	1.90				
Total HpCDD	1900	-----	1.90				
OCDF	630	-----	1.00				
OCDD	6000	-----	0.92				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-11		
Lab Sample ID	10257346013-S		
Filename	P140228B_13		
Injected By	BAL		
Total Amount Extracted	10.6 g	Matrix	Soil
% Moisture	12.2	Dilution	NA
Dry Weight Extracted	9.31 g	Collected	02/05/2014 09:00
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 02:12

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	140	0.31	0.10000	13.8611	13.8611	13.8611
Total TCDF	3200	0.31	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.24	1.00000	7.2140	7.2140	7.2140
Total TCDD	250	0.24	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	120	0.64	0.03000	3.6829	3.6829	3.6829
2,3,4,7,8-PeCDF	240	0.46	0.30000	72.1345	72.1345	72.1345
Total PeCDF	2800	0.55	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	26	0.36	1.00000	26.2290	26.2290	26.2290
Total PeCDD	390	0.36	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	200	0.63	0.10000	20.1051	20.1051	20.1051
1,2,3,6,7,8-HxCDF	160	0.77	0.10000	15.8041	15.8041	15.8041
2,3,4,6,7,8-HxCDF	250	0.83	0.10000	24.8891	24.8891	24.8891
1,2,3,7,8,9-HxCDF	34	0.77	0.10000	3.4094	3.4094	3.4094
Total HxCDF	2200	0.75	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	28	0.53	0.10000	2.8169	2.8169	2.8169
1,2,3,6,7,8-HxCDD	62	0.60	0.10000	6.2413	6.2413	6.2413
1,2,3,7,8,9-HxCDD	48	0.54	0.10000	4.7967	4.7967	4.7967
Total HxCDD	810	0.56	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	870	0.55	0.01000	8.6815	8.6815	8.6815
1,2,3,4,7,8,9-HpCDF	37	0.96	0.01000	0.3717	0.3717	0.3717
Total HpCDF	1300	0.75	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	920	1.9	0.01000	9.1633	9.1633	9.1633
Total HpCDD	1900	1.9	0.00000	0.0000	0.0000	0.0000
OCDF	630	1.0	0.00030	0.1884	0.1884	0.1884
OCDD	6000	0.92	0.00030	1.8081	1.8081	1.8081
				220 ng/Kg	**220 ng/Kg**	**220 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-12		
Lab Sample ID	10257346014-S		
Filename	P140228B_14		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	16.9	Dilution	NA
Dry Weight Extracted	8.48 g	Collected	02/05/2014 09:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 02:55

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	160	-----	0.96		2,3,7,8-TCDF-13C	2.00	67
Total TCDF	3700	-----	0.96	E	2,3,7,8-TCDD-13C	2.00	73
					1,2,3,7,8-PeCDF-13C	2.00	64
2,3,7,8-TCDD	-----	7.8	0.92	I	2,3,4,7,8-PeCDF-13C	2.00	61
Total TCDD	210	-----	0.92		1,2,3,7,8-PeCDD-13C	2.00	63
					1,2,3,4,7,8-HxCDF-13C	2.00	85
1,2,3,7,8-PeCDF	140	-----	2.20		1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	250	-----	2.00		2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	2800	-----	2.10		1,2,3,7,8,9-HxCDF-13C	2.00	70
					1,2,3,4,7,8-HxCDD-13C	2.00	77
1,2,3,7,8-PeCDD	26	-----	1.30		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	340	-----	1.30		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	200	-----	1.40		1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	200	-----	1.70		OCDD-13C	4.00	42
2,3,4,6,7,8-HxCDF	250	-----	1.70				
1,2,3,7,8,9-HxCDF	41	-----	1.90		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2200	-----	1.70		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	28	-----	2.10		2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	66	-----	2.60				
1,2,3,7,8,9-HxCDD	52	-----	2.70				
Total HxCDD	740	-----	2.50				
1,2,3,4,6,7,8-HpCDF	810	-----	1.10		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	45	-----	1.20		Equivalence: 230 ng/Kg		
Total HpCDF	1200	-----	1.20		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	1100	-----	2.70				
Total HpCDD	2100	-----	2.70				
OCDF	660	-----	3.00				
OCDD	7000	-----	2.80				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-12		
Lab Sample ID	10257346014-S		
Filename	P140228B_14		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	16.9	Dilution	NA
Dry Weight Extracted	8.48 g	Collected	02/05/2014 09:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 02:55

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	160	0.96	0.10000	16.4758	16.4758	16.4758
Total TCDF	3700	0.96	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.92	1.00000	7.7820	7.7820	7.7820
Total TCDD	210	0.92	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	140	2.2	0.03000	4.1408	4.1408	4.1408
2,3,4,7,8-PeCDF	250	2.0	0.30000	74.6559	74.6559	74.6559
Total PeCDF	2800	2.1	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	26	1.3	1.00000	25.9939	25.9939	25.9939
Total PeCDD	340	1.3	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	200	1.4	0.10000	19.7951	19.7951	19.7951
1,2,3,6,7,8-HxCDF	200	1.7	0.10000	20.2713	20.2713	20.2713
2,3,4,6,7,8-HxCDF	250	1.7	0.10000	24.6069	24.6069	24.6069
1,2,3,7,8,9-HxCDF	41	1.9	0.10000	4.0567	4.0567	4.0567
Total HxCDF	2200	1.7	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	28	2.1	0.10000	2.7781	2.7781	2.7781
1,2,3,6,7,8-HxCDD	66	2.6	0.10000	6.5790	6.5790	6.5790
1,2,3,7,8,9-HxCDD	52	2.7	0.10000	5.2103	5.2103	5.2103
Total HxCDD	740	2.5	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	810	1.1	0.01000	8.1337	8.1337	8.1337
1,2,3,4,7,8,9-HpCDF	45	1.2	0.01000	0.4486	0.4486	0.4486
Total HpCDF	1200	1.2	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	1100	2.7	0.01000	10.7723	10.7723	10.7723
Total HpCDD	2100	2.7	0.00000	0.0000	0.0000	0.0000
OCDF	660	3.0	0.00030	0.1974	0.1974	0.1974
OCDD	7000	2.8	0.00030	2.0878	2.0878	2.0878
				230 ng/Kg	**230 ng/Kg**	**230 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-13		
Lab Sample ID	10257346015-S		
Filename	P140228B_15		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	9.4	Dilution	NA
Dry Weight Extracted	9.33 g	Collected	02/05/2014 09:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 03:38

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	330	-----	0.71		2,3,7,8-TCDF-13C	2.00	78
Total TCDF	7100	-----	0.71	E	2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	17	-----	0.96		2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	550	-----	0.96		1,2,3,7,8-PeCDD-13C	2.00	73
					1,2,3,4,7,8-HxCDF-13C	2.00	94
1,2,3,7,8-PeCDF	230	-----	2.40		1,2,3,6,7,8-HxCDF-13C	2.00	93
2,3,4,7,8-PeCDF	420	-----	2.00		2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	4700	-----	2.20		1,2,3,7,8,9-HxCDF-13C	2.00	83
					1,2,3,4,7,8-HxCDD-13C	2.00	86
1,2,3,7,8-PeCDD	47	-----	1.10		1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	680	-----	1.10		1,2,3,4,6,7,8-HpCDF-13C	2.00	74
					1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	320	-----	1.80		1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	280	-----	1.40		OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	370	-----	2.10				
1,2,3,7,8,9-HxCDF	55	-----	3.30		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	3300	-----	2.10		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	44	-----	1.40		2,3,7,8-TCDD-37Cl4	0.20	106
1,2,3,6,7,8-HxCDD	83	-----	1.90				
1,2,3,7,8,9-HxCDD	74	-----	1.50				
Total HxCDD	1000	-----	1.60				
1,2,3,4,6,7,8-HpCDF	1100	-----	0.95		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	49	-----	2.00		Equivalence: 380 ng/Kg		
Total HpCDF	1500	-----	1.50		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	860	-----	2.00				
Total HpCDD	1800	-----	2.00				
OCDF	410	-----	2.10				
OCDD	5000	-----	2.90				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-13		
Lab Sample ID	10257346015-S		
Filename	P140228B_15		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	9.4	Dilution	NA
Dry Weight Extracted	9.33 g	Collected	02/05/2014 09:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 03:38

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	330	0.71	0.10000	32.7150	32.7150	32.7150
Total TCDF	7100	0.71	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	17	0.96	1.00000	17.0473	17.0473	17.0473
Total TCDD	550	0.96	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	230	2.4	0.03000	6.8601	6.8601	6.8601
2,3,4,7,8-PeCDF	420	2.0	0.30000	126.6528	126.6528	126.6528
Total PeCDF	4700	2.2	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	47	1.1	1.00000	47.3344	47.3344	47.3344
Total PeCDD	680	1.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	320	1.8	0.10000	31.9249	31.9249	31.9249
1,2,3,6,7,8-HxCDF	280	1.4	0.10000	28.1113	28.1113	28.1113
2,3,4,6,7,8-HxCDF	370	2.1	0.10000	37.3267	37.3267	37.3267
1,2,3,7,8,9-HxCDF	55	3.3	0.10000	5.5191	5.5191	5.5191
Total HxCDF	3300	2.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	44	1.4	0.10000	4.3691	4.3691	4.3691
1,2,3,6,7,8-HxCDD	83	1.9	0.10000	8.3001	8.3001	8.3001
1,2,3,7,8,9-HxCDD	74	1.5	0.10000	7.3762	7.3762	7.3762
Total HxCDD	1000	1.6	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	1100	0.95	0.01000	11.2948	11.2948	11.2948
1,2,3,4,7,8,9-HpCDF	49	2.0	0.01000	0.4879	0.4879	0.4879
Total HpCDF	1500	1.5	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	860	2.0	0.01000	8.5669	8.5669	8.5669
Total HpCDD	1800	2.0	0.00000	0.0000	0.0000	0.0000
OCDF	410	2.1	0.00030	0.1232	0.1232	0.1232
OCDD	5000	2.9	0.00030	1.4992	1.4992	1.4992
				380 ng/Kg	**380 ng/Kg**	**380 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-14		
Lab Sample ID	10257346016-S		
Filename	P140228B_16		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	16.8	Dilution	NA
Dry Weight Extracted	8.49 g	Collected	02/04/2014 12:52
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 04:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	29.0	-----	0.46		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	690.0	-----	0.46		2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	-----	1.0	0.46	IJ	2,3,4,7,8-PeCDF-13C	2.00	66
Total TCDD	41.0	-----	0.46		1,2,3,7,8-PeCDD-13C	2.00	68
					1,2,3,4,7,8-HxCDF-13C	2.00	91
1,2,3,7,8-PeCDF	26.0	-----	0.60		1,2,3,6,7,8-HxCDF-13C	2.00	88
2,3,4,7,8-PeCDF	50.0	-----	0.58		2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	600.0	-----	0.59		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	6.7	-----	0.60		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	110.0	-----	0.60		1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	69
1,2,3,4,7,8-HxCDF	46.0	-----	0.73		1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	50.0	-----	0.90		OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	61.0	-----	0.72				
1,2,3,7,8,9-HxCDF	9.5	-----	0.70		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	610.0	-----	0.76		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	12.0	-----	1.20		2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	32.0	-----	1.10				
1,2,3,7,8,9-HxCDD	24.0	-----	0.98				
Total HxCDD	320.0	-----	1.10				
1,2,3,4,6,7,8-HpCDF	280.0	-----	1.20		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	13.0	-----	1.20		Equivalence: 61 ng/Kg		
Total HpCDF	540.0	-----	1.20		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	680.0	-----	2.50				
Total HpCDD	1400.0	-----	2.50				
OCDF	340.0	-----	1.20				
OCDD	5300.0	-----	1.80				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-14		
Lab Sample ID	10257346016-S		
Filename	P140228B_16		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	16.8	Dilution	NA
Dry Weight Extracted	8.49 g	Collected	02/04/2014 12:52
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 04:21

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	29.0	0.46	0.10000	2.8982	2.8982	2.8982
Total TCDF	690.0	0.46	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.46	1.00000	1.0046	1.0046	1.0046
Total TCDD	41.0	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	26.0	0.60	0.03000	0.7718	0.7718	0.7718
2,3,4,7,8-PeCDF	50.0	0.58	0.30000	14.9708	14.9708	14.9708
Total PeCDF	600.0	0.59	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	6.7	0.60	1.00000	6.6760	6.6760	6.6760
Total PeCDD	110.0	0.60	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	46.0	0.73	0.10000	4.5985	4.5985	4.5985
1,2,3,6,7,8-HxCDF	50.0	0.90	0.10000	5.0122	5.0122	5.0122
2,3,4,6,7,8-HxCDF	61.0	0.72	0.10000	6.0587	6.0587	6.0587
1,2,3,7,8,9-HxCDF	9.5	0.70	0.10000	0.9543	0.9543	0.9543
Total HxCDF	610.0	0.76	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	12.0	1.2	0.10000	1.1630	1.1630	1.1630
1,2,3,6,7,8-HxCDD	32.0	1.1	0.10000	3.2300	3.2300	3.2300
1,2,3,7,8,9-HxCDD	24.0	0.98	0.10000	2.3563	2.3563	2.3563
Total HxCDD	320.0	1.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	280.0	1.2	0.01000	2.8133	2.8133	2.8133
1,2,3,4,7,8,9-HpCDF	13.0	1.2	0.01000	0.1286	0.1286	0.1286
Total HpCDF	540.0	1.2	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	680.0	2.5	0.01000	6.8214	6.8214	6.8214
Total HpCDD	1400.0	2.5	0.00000	0.0000	0.0000	0.0000
OCDF	340.0	1.2	0.00030	0.1033	0.1033	0.1033
OCDD	5300.0	1.8	0.00030	1.5833	1.5833	1.5833
				61 ng/Kg	**61 ng/Kg**	**61 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-15		
Lab Sample ID	10257346017-S		
Filename	P140228B_17		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	11.3	Dilution	NA
Dry Weight Extracted	9.22 g	Collected	02/04/2014 13:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 05:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	46	-----	0.43		2,3,7,8-TCDF-13C	2.00	70
Total TCDF	1100	-----	0.43		2,3,7,8-TCDD-13C	2.00	77
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	-----	2.4	0.36	I	2,3,4,7,8-PeCDF-13C	2.00	62
Total TCDD	87	-----	0.36		1,2,3,7,8-PeCDD-13C	2.00	65
					1,2,3,4,7,8-HxCDF-13C	2.00	85
1,2,3,7,8-PeCDF	46	-----	0.62		1,2,3,6,7,8-HxCDF-13C	2.00	84
2,3,4,7,8-PeCDF	97	-----	0.65		2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	1100	-----	0.64		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	14	-----	0.69		1,2,3,6,7,8-HxCDD-13C	2.00	70
Total PeCDD	170	-----	0.69		1,2,3,4,6,7,8-HpCDF-13C	2.00	68
					1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	89	-----	1.70		1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	82	-----	0.89		OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	110	-----	1.20				
1,2,3,7,8,9-HxCDF	17	-----	0.70		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1000	-----	1.10		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	18	-----	1.60		2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	43	-----	1.50				
1,2,3,7,8,9-HxCDD	35	-----	1.20				
Total HxCDD	490	-----	1.50				
1,2,3,4,6,7,8-HpCDF	490	-----	0.53		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	24	-----	0.88		Equivalence: 110 ng/Kg		
Total HpCDF	760	-----	0.71		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	840	-----	0.99				
Total HpCDD	1800	-----	0.99				
OCDF	660	-----	1.40				
OCDD	5700	-----	2.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-15		
Lab Sample ID	10257346017-S		
Filename	P140228B_17		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	11.3	Dilution	NA
Dry Weight Extracted	9.22 g	Collected	02/04/2014 13:45
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_01 & P140228B_19	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 05:04

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	46	0.43	0.10000	4.6215	4.6215	4.6215
Total TCDF	1100	0.43	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.36	1.00000	2.3909	2.3909	2.3909
Total TCDD	87	0.36	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	46	0.62	0.03000	1.3870	1.3870	1.3870
2,3,4,7,8-PeCDF	97	0.65	0.30000	29.1231	29.1231	29.1231
Total PeCDF	1100	0.64	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	14	0.69	1.00000	14.2288	14.2288	14.2288
Total PeCDD	170	0.69	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	89	1.7	0.10000	8.9167	8.9167	8.9167
1,2,3,6,7,8-HxCDF	82	0.89	0.10000	8.2004	8.2004	8.2004
2,3,4,6,7,8-HxCDF	110	1.2	0.10000	11.0519	11.0519	11.0519
1,2,3,7,8,9-HxCDF	17	0.70	0.10000	1.7175	1.7175	1.7175
Total HxCDF	1000	1.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	18	1.6	0.10000	1.8308	1.8308	1.8308
1,2,3,6,7,8-HxCDD	43	1.5	0.10000	4.3374	4.3374	4.3374
1,2,3,7,8,9-HxCDD	35	1.2	0.10000	3.5304	3.5304	3.5304
Total HxCDD	490	1.5	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	490	0.53	0.01000	4.8664	4.8664	4.8664
1,2,3,4,7,8,9-HpCDF	24	0.88	0.01000	0.2371	0.2371	0.2371
Total HpCDF	760	0.71	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	840	0.99	0.01000	8.4395	8.4395	8.4395
Total HpCDD	1800	0.99	0.00000	0.0000	0.0000	0.0000
OCDF	660	1.4	0.00030	0.1972	0.1972	0.1972
OCDD	5700	2.0	0.00030	1.7233	1.7233	1.7233
				110 ng/Kg	**110 ng/Kg**	**110 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-16		
Lab Sample ID	10257346018-S		
Filename	P140301A_14		
Injected By	BAL		
Total Amount Extracted	10.6 g	Matrix	Soil
% Moisture	9.1	Dilution	NA
Dry Weight Extracted	9.64 g	Collected	02/04/2014 14:11
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 16:29

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	13.0	-----	0.130		2,3,7,8-TCDF-13C	2.00	71	
Total TCDF	240.0	-----	0.130		2,3,7,8-TCDD-13C	2.00	77	
					1,2,3,7,8-PeCDF-13C	2.00	68	
2,3,7,8-TCDD	-----	0.79	0.110	IJ	2,3,4,7,8-PeCDF-13C	2.00	65	
Total TCDD	19.0	-----	0.110		1,2,3,7,8-PeCDD-13C	2.00	67	
					1,2,3,4,7,8-HxCDF-13C	2.00	78	
1,2,3,7,8-PeCDF	13.0	-----	0.130		1,2,3,6,7,8-HxCDF-13C	2.00	79	
2,3,4,7,8-PeCDF	27.0	-----	0.100		2,3,4,6,7,8-HxCDF-13C	2.00	74	
Total PeCDF	290.0	-----	0.120		1,2,3,7,8,9-HxCDF-13C	2.00	54	
					1,2,3,4,7,8-HxCDD-13C	2.00	73	
1,2,3,7,8-PeCDD	6.1	-----	0.130		1,2,3,6,7,8-HxCDD-13C	2.00	64	
Total PeCDD	51.0	-----	0.130		1,2,3,4,6,7,8-HpCDF-13C	2.00	66	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	62	
1,2,3,4,7,8-HxCDF	23.0	-----	0.220		1,2,3,4,6,7,8-HpCDD-13C	2.00	67	
1,2,3,6,7,8-HxCDF	16.0	-----	0.370		OCDD-13C	4.00	68	Y
2,3,4,6,7,8-HxCDF	31.0	-----	0.190					
1,2,3,7,8,9-HxCDF	4.2	-----	0.230	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	340.0	-----	0.250		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	14.0	-----	0.500		2,3,7,8-TCDD-37Cl4	0.20	80	
1,2,3,6,7,8-HxCDD	36.0	-----	0.460					
1,2,3,7,8,9-HxCDD	27.0	-----	0.360					
Total HxCDD	370.0	-----	0.440					
1,2,3,4,6,7,8-HpCDF	180.0	-----	0.240		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	7.0	-----	0.270		Equivalence: 44 ng/Kg			
Total HpCDF	370.0	-----	0.250		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	850.0	-----	0.280					
Total HpCDD	1900.0	-----	0.280					
OCDF	230.0	-----	0.200					
OCDD	5800.0	-----	0.310					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-16		
Lab Sample ID	10257346018-S		
Filename	P140301A_14		
Injected By	BAL		
Total Amount Extracted	10.6 g	Matrix	Soil
% Moisture	9.1	Dilution	NA
Dry Weight Extracted	9.64 g	Collected	02/04/2014 14:11
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 16:29

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	13.0	0.13	0.10000	1.2999	1.2999	1.2999
Total TCDF	240.0	0.13	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.11	1.00000	0.7901	0.7901	0.7901
Total TCDD	19.0	0.11	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	13.0	0.13	0.03000	0.3792	0.3792	0.3792
2,3,4,7,8-PeCDF	27.0	0.100	0.30000	7.9660	7.9660	7.9660
Total PeCDF	290.0	0.12	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	6.1	0.13	1.00000	6.1323	6.1323	6.1323
Total PeCDD	51.0	0.13	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	23.0	0.22	0.10000	2.2521	2.2521	2.2521
1,2,3,6,7,8-HxCDF	16.0	0.37	0.10000	1.5828	1.5828	1.5828
2,3,4,6,7,8-HxCDF	31.0	0.19	0.10000	3.0979	3.0979	3.0979
1,2,3,7,8,9-HxCDF	4.2	0.23	0.10000	0.4189	0.4189	0.4189
Total HxCDF	340.0	0.25	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	14.0	0.50	0.10000	1.3776	1.3776	1.3776
1,2,3,6,7,8-HxCDD	36.0	0.46	0.10000	3.5695	3.5695	3.5695
1,2,3,7,8,9-HxCDD	27.0	0.36	0.10000	2.7198	2.7198	2.7198
Total HxCDD	370.0	0.44	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	180.0	0.24	0.01000	1.8242	1.8242	1.8242
1,2,3,4,7,8,9-HpCDF	7.0	0.27	0.01000	0.0699	0.0699	0.0699
Total HpCDF	370.0	0.25	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	850.0	0.28	0.01000	8.5450	8.5450	8.5450
Total HpCDD	1900.0	0.28	0.00000	0.0000	0.0000	0.0000
OCDF	230.0	0.20	0.00030	0.0682	0.0682	0.0682
OCDD	5800.0	0.31	0.00030	1.7485	1.7485	1.7485
				44 ng/Kg	**44 ng/Kg**	**44 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-39446	Matrix	Solid
Filename	F140226B_09	Dilution	NA
Total Amount Extracted	10.5 g	Extracted	02/24/2014 21:00
ICAL ID	F131125	Analyzed	02/27/2014 02:08
CCal Filename(s)	F140226B_01 & F140226B_17	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.140	0.035	IJ	2,3,7,8-TCDF-13C	2.00	74
Total TCDF	0.430	-----	0.035	J	2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	-----	0.060	0.057	IJ	2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.057		1,2,3,7,8-PeCDD-13C	2.00	88
					1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	-----	0.150	0.062	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	91
2,3,4,7,8-PeCDF	ND	-----	0.037		2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	ND	-----	0.049		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	-----	0.086	0.039	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.039		1,2,3,4,6,7,8-HpCDF-13C	2.00	74
					1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	-----	0.048		1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	0.094	-----	0.035	J	OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	-----	0.028	0.028	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.042		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.094	-----	0.038	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.050		2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	-----	0.081	0.052	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.048				
Total HxCDD	ND	-----	0.050				
1,2,3,4,6,7,8-HpCDF	-----	0.096	0.056	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.047		Equivalence: 0.19 ng/Kg		
Total HpCDF	ND	-----	0.051		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.068	0.054	IJ			
Total HpCDD	0.100	-----	0.054	J			
OCDF	0.200	-----	0.120	J			
OCDD	-----	0.370	0.150	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID			
Lab Sample ID	BLANK-39446		
Filename	F140226B_09		
Injected By	BAL		
Total Amount Extracted	10.5 g	Matrix	Solid
% Moisture	0.0	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	02/24/2014 14:08
ICAL ID	F131125	Received	02/24/2014 14:08
CCal Filename(s)	F140226B_01 & F140226B_17	Extracted	02/24/2014 21:00
Method Blank ID		Analyzed	02/27/2014 02:08

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	ND	0.035	0.10000	0.0136	0.0136	0.0136
Total TCDF	0.430	0.035	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.057	1.00000	0.0601	0.0601	0.0601
Total TCDD	ND	0.057	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	ND	0.062	0.03000	0.0044	0.0044	0.0044
2,3,4,7,8-PeCDF	ND	0.037	0.30000	0.0000	0.0056	0.0112
Total PeCDF	ND	0.049	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.039	1.00000	0.0857	0.0857	0.0857
Total PeCDD	ND	0.039	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	ND	0.048	0.10000	0.0000	0.0024	0.0048
1,2,3,6,7,8-HxCDF	0.094	0.035	0.10000	0.0094	0.0094	0.0094
2,3,4,6,7,8-HxCDF	ND	0.028	0.10000	0.0028	0.0028	0.0028
1,2,3,7,8,9-HxCDF	ND	0.042	0.10000	0.0000	0.0021	0.0042
Total HxCDF	0.094	0.038	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	ND	0.050	0.10000	0.0000	0.0025	0.0050
1,2,3,6,7,8-HxCDD	ND	0.052	0.10000	0.0081	0.0081	0.0081
1,2,3,7,8,9-HxCDD	ND	0.048	0.10000	0.0000	0.0024	0.0048
Total HxCDD	ND	0.050	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	ND	0.056	0.01000	0.0010	0.0010	0.0010
1,2,3,4,7,8,9-HpCDF	ND	0.047	0.01000	0.0000	0.0002	0.0005
Total HpCDF	ND	0.051	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	ND	0.054	0.01000	0.0007	0.0007	0.0007
Total HpCDD	0.100	0.054	0.00000	0.0000	0.0000	0.0000
OCDF	0.200	0.12	0.00030	0.0001	0.0001	0.0001
OCDD	ND	0.15	0.00030	0.0001	0.0001	0.0001
				0.19 ng/Kg	**0.20 ng/Kg**	**0.22 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-39465	Matrix	Solid
Filename	P140301A_05	Dilution	NA
Total Amount Extracted	10.4 g	Extracted	02/26/2014 21:30
ICAL ID	P130624	Analyzed	03/01/2014 10:03
CCal Filename(s)	P140228B_19 & P140301A_15	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	-----	0.14	0.140	IJ	2,3,7,8-TCDF-13C	2.00	75	
Total TCDF	ND	-----	0.140		2,3,7,8-TCDD-13C	2.00	82	
					1,2,3,7,8-PeCDF-13C	2.00	75	
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	70	
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	73	
					1,2,3,4,7,8-HxCDF-13C	2.00	83	
1,2,3,7,8-PeCDF	ND	-----	0.160		1,2,3,6,7,8-HxCDF-13C	2.00	87	
2,3,4,7,8-PeCDF	ND	-----	0.110		2,3,4,6,7,8-HxCDF-13C	2.00	83	
Total PeCDF	ND	-----	0.130		1,2,3,7,8,9-HxCDF-13C	2.00	83	
					1,2,3,4,7,8-HxCDD-13C	2.00	79	
1,2,3,7,8-PeCDD	ND	-----	0.160		1,2,3,6,7,8-HxCDD-13C	2.00	72	
Total PeCDD	ND	-----	0.160		1,2,3,4,6,7,8-HpCDF-13C	2.00	77	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	74	
1,2,3,4,7,8-HxCDF	ND	-----	0.110		1,2,3,4,6,7,8-HpCDD-13C	2.00	76	
1,2,3,6,7,8-HxCDF	ND	-----	0.084		OCDD-13C	4.00	81	Y
2,3,4,6,7,8-HxCDF	ND	-----	0.091					
1,2,3,7,8,9-HxCDF	ND	-----	0.110		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	ND	-----	0.099		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	0.130		2,3,7,8-TCDD-37Cl4	0.20	90	
1,2,3,6,7,8-HxCDD	ND	-----	0.130					
1,2,3,7,8,9-HxCDD	ND	-----	0.130					
Total HxCDD	ND	-----	0.130					
1,2,3,4,6,7,8-HpCDF	-----	0.20	0.120	IJ	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	-----	0.170		Equivalence: 0.018 ng/Kg			
Total HpCDF	ND	-----	0.140		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	0.17	-----	0.140	J				
Total HpCDD	0.44	-----	0.140	J				
OCDF	ND	-----	0.260					
OCDD	0.95	-----	0.330	J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID			
Lab Sample ID	BLANK-39465		
Filename	P140301A_05		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Solid
% Moisture	0.0	Dilution	NA
Dry Weight Extracted	10.4 g	Collected	02/25/2014 20:04
ICAL ID	P130624	Received	02/25/2014 20:04
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID		Analyzed	03/01/2014 10:03

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	ND	0.14	0.10000	0.0143	0.0143	0.0143
Total TCDF	ND	0.14	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.15	1.00000	0.0000	0.0752	0.1504
Total TCDD	ND	0.15	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	ND	0.16	0.03000	0.0000	0.0023	0.0047
2,3,4,7,8-PeCDF	ND	0.11	0.30000	0.0000	0.0169	0.0339
Total PeCDF	ND	0.13	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.16	1.00000	0.0000	0.0775	0.1550
Total PeCDD	ND	0.16	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	ND	0.11	0.10000	0.0000	0.0053	0.0107
1,2,3,6,7,8-HxCDF	ND	0.084	0.10000	0.0000	0.0042	0.0084
2,3,4,6,7,8-HxCDF	ND	0.091	0.10000	0.0000	0.0045	0.0091
1,2,3,7,8,9-HxCDF	ND	0.11	0.10000	0.0000	0.0057	0.0114
Total HxCDF	ND	0.099	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	ND	0.13	0.10000	0.0000	0.0067	0.0134
1,2,3,6,7,8-HxCDD	ND	0.13	0.10000	0.0000	0.0064	0.0129
1,2,3,7,8,9-HxCDD	ND	0.13	0.10000	0.0000	0.0065	0.0130
Total HxCDD	ND	0.13	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	ND	0.12	0.01000	0.0020	0.0020	0.0020
1,2,3,4,7,8,9-HpCDF	ND	0.17	0.01000	0.0000	0.0008	0.0017
Total HpCDF	ND	0.14	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	0.17	0.14	0.01000	0.0017	0.0017	0.0017
Total HpCDD	0.44	0.14	0.00000	0.0000	0.0000	0.0000
OCDF	ND	0.26	0.00030	0.0000	0.0000	0.0001
OCDD	0.95	0.33	0.00030	0.0003	0.0003	0.0003
				0.018 ng/Kg	**0.23 ng/Kg**	**0.44 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-39447		
Filename	F140226B_15	Matrix	Solid
Total Amount Extracted	10.0 g	Dilution	NA
ICAL ID	F131125	Extracted	02/24/2014 21:00
CCal Filename(s)	F140226B_01 & F140226B_17	Analyzed	02/27/2014 06:48
Method Blank ID	BLANK-39446	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	115	2,3,7,8-TCDF-13C	2.0	75
Total TCDF				2,3,7,8-TCDD-13C	2.0	85
				1,2,3,7,8-PeCDF-13C	2.0	85
2,3,7,8-TCDD	0.20	0.18	89	2,3,4,7,8-PeCDF-13C	2.0	85
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	97
				1,2,3,4,7,8-HxCDF-13C	2.0	81
1,2,3,7,8-PeCDF	1.0	1.2	117	1,2,3,6,7,8-HxCDF-13C	2.0	89
2,3,4,7,8-PeCDF	1.0	1.1	109	2,3,4,6,7,8-HxCDF-13C	2.0	87
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	82
				1,2,3,4,7,8-HxCDD-13C	2.0	77
1,2,3,7,8-PeCDD	1.0	1.0	100	1,2,3,6,7,8-HxCDD-13C	2.0	78
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	78
				1,2,3,4,7,8,9-HpCDF-13C	2.0	75
1,2,3,4,7,8-HxCDF	1.0	1.1	110	1,2,3,4,6,7,8-HpCDD-13C	2.0	83
1,2,3,6,7,8-HxCDF	1.0	1.1	109	OCDD-13C	4.0	69
2,3,4,6,7,8-HxCDF	1.0	1.0	100			
1,2,3,7,8,9-HxCDF	1.0	1.1	107	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	115	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	1.0	1.3	128			
1,2,3,7,8,9-HxCDD	1.0	1.2	119			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	106			
1,2,3,4,7,8,9-HpCDF	1.0	0.94	94			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	102			
Total HpCDD						
OCDF	2.0	2.0	99			
OCDD	2.0	2.2	110			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range
Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-39466		
Filename	P140301A_01	Matrix	Solid
Total Amount Extracted	10.6 g	Dilution	NA
ICAL ID	P130624	Extracted	02/26/2014 21:30
CCal Filename(s)	P140228B_19 & P140301A_15	Analyzed	03/01/2014 07:12
Method Blank ID	BLANK-39465	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	0.20	0.22	112	2,3,7,8-TCDF-13C	2.0	79	
Total TCDF				2,3,7,8-TCDD-13C	2.0	85	
				1,2,3,7,8-PeCDF-13C	2.0	75	
2,3,7,8-TCDD	0.20	0.18	89	2,3,4,7,8-PeCDF-13C	2.0	71	
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	75	
				1,2,3,4,7,8-HxCDF-13C	2.0	88	
1,2,3,7,8-PeCDF	1.0	1.2	117	1,2,3,6,7,8-HxCDF-13C	2.0	90	
2,3,4,7,8-PeCDF	1.0	1.1	111	2,3,4,6,7,8-HxCDF-13C	2.0	86	
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	88	
				1,2,3,4,7,8-HxCDD-13C	2.0	80	
1,2,3,7,8-PeCDD	1.0	0.97	97	1,2,3,6,7,8-HxCDD-13C	2.0	75	
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	82	
				1,2,3,4,7,8,9-HpCDF-13C	2.0	77	
1,2,3,4,7,8-HxCDF	1.0	1.1	111	1,2,3,4,6,7,8-HpCDD-13C	2.0	80	
1,2,3,6,7,8-HxCDF	1.0	1.1	112	OCDD-13C	4.0	100	Y
2,3,4,6,7,8-HxCDF	1.0	1.1	112				
1,2,3,7,8,9-HxCDF	1.0	1.1	106	1,2,3,4-TCDD-13C	2.0	NA	
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA	
1,2,3,4,7,8-HxCDD	1.0	1.2	115	2,3,7,8-TCDD-37Cl4	0.20	85	
1,2,3,6,7,8-HxCDD	1.0	1.2	122				
1,2,3,7,8,9-HxCDD	1.0	1.2	118				
Total HxCDD							
1,2,3,4,6,7,8-HpCDF	1.0	1.1	114				
1,2,3,4,7,8,9-HpCDF	1.0	1.0	103				
Total HpCDF							
1,2,3,4,6,7,8-HpCDD	1.0	1.1	106				
Total HpCDD							
OCDF	2.0	2.2	108				
OCDD	2.0	2.2	110				

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-39448		
Filename	F140226B_16	Matrix	Solid
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	F131125	Extracted	02/24/2014 21:00
CCal Filename(s)	F140226B_01 & F140226B_17	Analyzed	02/27/2014 07:34
Method Blank ID	BLANK-39446	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.24	119	2,3,7,8-TCDF-13C	2.0	64
Total TCDF				2,3,7,8-TCDD-13C	2.0	74
				1,2,3,7,8-PeCDF-13C	2.0	78
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.0	81
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	90
				1,2,3,4,7,8-HxCDF-13C	2.0	78
1,2,3,7,8-PeCDF	1.0	1.2	119	1,2,3,6,7,8-HxCDF-13C	2.0	90
2,3,4,7,8-PeCDF	1.0	1.1	109	2,3,4,6,7,8-HxCDF-13C	2.0	87
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	78
				1,2,3,4,7,8-HxCDD-13C	2.0	73
1,2,3,7,8-PeCDD	1.0	1.0	103	1,2,3,6,7,8-HxCDD-13C	2.0	81
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	78
				1,2,3,4,7,8,9-HpCDF-13C	2.0	74
1,2,3,4,7,8-HxCDF	1.0	1.2	115	1,2,3,4,6,7,8-HpCDD-13C	2.0	84
1,2,3,6,7,8-HxCDF	1.0	1.1	107	OCDD-13C	4.0	73
2,3,4,6,7,8-HxCDF	1.0	1.0	102			
1,2,3,7,8,9-HxCDF	1.0	1.1	107	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	124	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	1.0	1.2	123			
1,2,3,7,8,9-HxCDD	1.0	1.2	121			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	108			
1,2,3,4,7,8,9-HpCDF	1.0	0.94	94			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	102			
Total HpCDD						
OCDF	2.0	2.0	101			
OCDD	2.0	2.2	110			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client	ESN Pacific		
Spike 1 ID	LCS-39447	Spike 2 ID	LCSD-39448
Spike 1 Filename	F140226B_15	Spike 2 Filename	F140226B_16

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	115	119	3.4
2,3,7,8-TCDD	89	91	2.2
1,2,3,7,8-PeCDF	117	119	1.7
2,3,4,7,8-PeCDF	109	109	0.0
1,2,3,7,8-PeCDD	100	103	3.0
1,2,3,4,7,8-HxCDF	110	115	4.4
1,2,3,6,7,8-HxCDF	109	107	1.9
2,3,4,6,7,8-HxCDF	100	102	2.0
1,2,3,7,8,9-HxCDF	107	107	0.0
1,2,3,4,7,8-HxCDD	115	124	7.5
1,2,3,6,7,8-HxCDD	128	123	4.0
1,2,3,7,8,9-HxCDD	119	121	1.7
1,2,3,4,6,7,8-HpCDF	106	108	1.9
1,2,3,4,7,8,9-HpCDF	94	94	0.0
1,2,3,4,6,7,8-HpCDD	102	102	0.0
OCDF	99	101	2.0
OCDD	110	110	0.0

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - ESN Pacific

Client's Sample ID	RHS-DU-1.2-MS		
Lab Sample ID	10257346002-S-MS		
Filename	P140301A_02	Matrix	Soil
Total Amount Extracted	10.0 g	Dilution	NA
ICAL ID	P130624	Extracted	02/26/2014 21:30
CCal Filename(s)	P140228B_19 & P140301A_15	Analyzed	03/01/2014 07:55
Method Blank ID	BLANK-39465	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	5.59	2796 E	2,3,7,8-TCDF-13C	2.00	77
				2,3,7,8-TCDD-13C	2.00	82
				1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	0.20	0.54	268	2,3,4,7,8-PeCDF-13C	2.00	70
				1,2,3,7,8-PeCDD-13C	2.00	72
				1,2,3,4,7,8-HxCDF-13C	2.00	92
1,2,3,7,8-PeCDF	1.00	4.91	491	1,2,3,6,7,8-HxCDF-13C	2.00	90
2,3,4,7,8-PeCDF	1.00	8.91	891	2,3,4,6,7,8-HxCDF-13C	2.00	86
				1,2,3,7,8,9-HxCDF-13C	2.00	85
				1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	1.00	1.92	192	1,2,3,6,7,8-HxCDD-13C	2.00	75
				1,2,3,4,6,7,8-HpCDF-13C	2.00	75
				1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	1.00	6.83	683	1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	1.00	6.06	606	OCDD-13C	4.00	79 Y
2,3,4,6,7,8-HxCDF	1.00	8.25	825			
1,2,3,7,8,9-HxCDF	1.00	1.89	189	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.88	188	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	1.00	2.54	254			
1,2,3,7,8,9-HxCDD	1.00	2.25	225			
1,2,3,4,6,7,8-HpCDF	1.00	24.43	2443 E			
1,2,3,4,7,8,9-HpCDF	1.00	1.78	178			
1,2,3,4,6,7,8-HpCDD	1.00	8.00	800			
OCDF	2.00	7.05	352			
OCDD	2.00	19.55	977			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - ESN Pacific

Client's Sample ID	RHS-DU-1.2-MSD		
Lab Sample ID	10257346002-S-MSD		
Filename	P140301A_03	Matrix	Soil
Total Amount Extracted	10.1 g	Dilution	NA
ICAL ID	P130624	Extracted	02/26/2014 21:30
CCal Filename(s)	P140228B_19 & P140301A_15	Analyzed	03/01/2014 08:38
Method Blank ID	BLANK-39465	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	5.58	2791 E	2,3,7,8-TCDF-13C	2.00	80
				2,3,7,8-TCDD-13C	2.00	87
				1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	0.20	0.53	266	2,3,4,7,8-PeCDF-13C	2.00	77
				1,2,3,7,8-PeCDD-13C	2.00	81
				1,2,3,4,7,8-HxCDF-13C	2.00	90
1,2,3,7,8-PeCDF	1.00	5.14	514	1,2,3,6,7,8-HxCDF-13C	2.00	90
2,3,4,7,8-PeCDF	1.00	8.80	880	2,3,4,6,7,8-HxCDF-13C	2.00	86
				1,2,3,7,8,9-HxCDF-13C	2.00	83
				1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	1.00	1.85	185	1,2,3,6,7,8-HxCDD-13C	2.00	74
				1,2,3,4,6,7,8-HpCDF-13C	2.00	77
				1,2,3,4,7,8,9-HpCDF-13C	2.00	77
1,2,3,4,7,8-HxCDF	1.00	6.92	692	1,2,3,4,6,7,8-HpCDD-13C	2.00	81
1,2,3,6,7,8-HxCDF	1.00	6.11	611	OCDD-13C	4.00	88 Y
2,3,4,6,7,8-HxCDF	1.00	8.12	812			
1,2,3,7,8,9-HxCDF	1.00	1.94	194	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.98	198	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	1.00	2.58	258			
1,2,3,7,8,9-HxCDD	1.00	2.40	240			
1,2,3,4,6,7,8-HpCDF	1.00	24.04	2404 E			
1,2,3,4,7,8,9-HpCDF	1.00	1.82	182			
1,2,3,4,6,7,8-HpCDD	1.00	7.85	785			
OCDF	2.00	7.18	359			
OCDD	2.00	19.02	951			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - ESN Pacific

Client Sample ID	RHS-DU-1.2			Dry Weights	
Lab Sample ID	10257346002-S	Sample Filename	P140301A_06	Sample Amount	9.33 g
MS ID	10257346002-S-MS	MS Filename	P140301A_02	MS Amount	9.2 g
MSD ID	10257346002-S-MSD	MSD Filename	P140301A_03	MSD Amount	9.2 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	Background Subtracted MSD % Rec.	Background Subtracted RPD
2,3,7,8-TCDF	630.003	0.20	5.59	5.58	0.2	0	0	0.0
2,3,7,8-TCDD	38.298	0.20	0.54	0.53	0.6	93	89	3.6
1,2,3,7,8-PeCDF	471.535	1.00	4.91	5.14	4.7	59	79	27.8
2,3,4,7,8-PeCDF	969.248	1.00	8.91	8.80	1.2	4	0	200.0
1,2,3,7,8-PeCDD	117.881	1.00	1.92	1.85	3.8	84	76	10.3
1,2,3,4,7,8-HxCDF	872.673	1.00	6.83	6.92	1.3	0	0	0.0
1,2,3,6,7,8-HxCDF	740.624	1.00	6.06	6.11	0.9	0	0	0.0
2,3,4,6,7,8-HxCDF	1019.369	1.00	8.25	8.12	1.6	0	0	0.0
1,2,3,7,8,9-HxCDF	121.000	1.00	1.89	1.94	2.5	79	82	4.5
1,2,3,4,7,8-HxCDD	106.051	1.00	1.88	1.98	5.1	91	100	9.3
1,2,3,6,7,8-HxCDD	199.110	1.00	2.54	2.58	1.5	72	74	2.6
1,2,3,7,8,9-HxCDD	154.994	1.00	2.25	2.40	6.3	83	97	14.7
1,2,3,4,6,7,8-HpCDF	3233.560	1.00	24.43	24.04	1.6	0	0	0.0
1,2,3,4,7,8,9-HpCDF	104.864	1.00	1.78	1.82	2.2	82	85	3.6
1,2,3,4,6,7,8-HpCDD	849.687	1.00	8.00	7.85	2.0	23	0	200.0
OCDF	562.760	2.00	7.05	7.18	1.9	95	99	4.2
OCDD	1906.520	2.00	19.55	19.02	2.7	105	70	39.9

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Karen Carvallo
ESN Pacific
2020-B Kahai Street
Honolulu HI 96819

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Prepared Date:
March 6, 2014

Report Information:

Pace Project #: 10257348
Sample Receipt Date: 02/11/2014
Client Project #: D1402050037
Client Sub PO #: N/A
State Cert #: SLD

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

March 06, 2014

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

ACCREDITED IN ACCORDANCE WITH nelac

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on seventeen samples submitted by a representative of ESN Pacific. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were based on signal-to-noise measurements.

The results provided in this report include lower-bound, mid-bound, and upper-bound toxic equivalence (TEQ) results. Lower bound TEQ results include only contributions from positive values in the sample. Mid-bound TEQ results include one-half of the reporting limit in cases where an analyte was not detected, along with contributions from positives in the sample. Upper-bound TEQ results include the full reporting limit in cases where an analyte was not detected, along with contributions from positives in the sample.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 47-134%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained or "P" where polychlorinated diphenyl ethers were present. Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of selected congeners. These levels were below the calibration range of the method. The levels reported for the affected congeners in the field samples were higher than the corresponding blank levels by one or more orders of magnitude. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

Laboratory and matrix spike samples were also prepared with the sample batches using clean sand or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 89-129% with relative percent differences of 0.0-8.0%. The background-subtracted recovery values obtained for TCDF and OCDD in the matrix spike duplicate were above the 70-130% target range, possibly due to sample inhomogeneity. Matrix spikes were prepared with the 02/26/2014 sample batch using sample material from a separate project; results from these analyses will be provided upon request. Matrix spikes were not prepared with the 02/24/2014 sample batch.

The responses obtained for selected native and labeled congeners in calibration standard analyses U140226B_20, P140301A_15, and U140304B_20 were outside the target ranges. As specified in the method, the averages of the daily response factors for these compounds were used in the calculations for

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

the samples from these runshifts. The affected values were flagged "Y" on the results tables.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Minnesota	027-053-137
Alabama	40770	Mississippi	MN00064
Alaska	MN00064	Montana	92
Arizona	AZ0014	Nebraska	
Arkansas	88-0680	Nevada	MN_00064_200
California	01155CA	New Jersey (NE	MN002
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 8	8TMS-Q	North Dakota	R-036
Florida (NELAP	E87605	Ohio	4150
Georgia (DNR)	959	Oklahoma	D9922
Guam	959	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN300001-001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Puerto Rico	MN00064
Indiana	C-MN-01	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia	9952C
Maryland	322	Wisconsin	999407970
Michigan	9909	Wyoming	8TMS-Q

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

ESN PACIFIC'S CHAIN-OF-CUSTODY RECORD 1025734B

CLIENT: ESN Pacific
ADDRESS: 2020-B Kahai St Honolulu, HI 96819
PHONE: 8088470067 FAX: 8088470917
EMAIL: esn@esnpacific.com
CLIENT PROJECT #: Project Manager: K. Carvallo

TAT : 10-day
DATE: 2-7-14 PAGE 2 OF 2
ESN PROJECT # D1402050037
LOCATION/PROJECT NAME: BV - Radford High School
COLLECTOR: DATE COLLECTED: 2/4-2/5

	Sample ID#	Date	Time	Sample Type	Container Type	Dioxins/Furans 8290	Comments	# of Containers
1	RHS-DU-17	2/4	1436	soil		X	1025734B001	1
2	RHS-DU-17.2	2/4	1449			X	002	1
3	RHS-DU-17.3	2/4	1502			X	003	1
4	RHS-DU-18	2/4	1300			X	004	1
5	RHS-DU-19	2/4	1422			X	005	1
6	RHS-DU-20	2/4	1146			X	006	1
7	RHS-DU-21	2/4	1226			X	007	1
8	RHS-DU-22	2/4	1015			X	008	1
9	RHS-DU-23	2/4	1023			X	009	1
10	RHS-DU-24	2/4	1050			X	010	1
11	RHS-DU-25	2/4	1115			X	011	1
12	RHS-DU-26	2/4	1020			X	012	1
13	RHS-DU-26.2	2/4	1059			X	013	1
14	RHS-DU-26.3	2/4	1145			X	014	1
15	RHS-DU-27	2/4	1000			X	015	1
16	RHS-DU-28	2/4	1007			X	016	1
17	RHS-DU-29	2/4	945			X	017	1
	Last Entry							
20								

RELINQUISHED BY:(Signature) DATE/TIME
Kaw Carvallo
K. Carvallo via FedEx/ESN NW 2/7/14 1500

RECEIVED BY (Signature) DATE/TIME T=2.4
2/11/14 907

RELINQUISHED BY:(Signature) DATE/TIME

RECEIVED BY (Signature) DATE/TIME

SAMPLE RECEIPT:
TOTAL # OF CONTAINERS 17 (of 35)
COC SEALS Y / N / NA
SEALS INTACT Y / N / NA
RECEIVED TEMP:

LABORATORY NOTES:
Samples MI prepped at ESN Pacific

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 07Nov2013 Page 1 of 1
	Document No.: F-MN-L-213-rev.08	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: ESN Pacifics

Project #: WO# : 10257348

10257348

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 1Z V23 U3F 13 9914 6463

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermom. Used: ☐ 80512447 ☐ 72337080 ☒ B88A912167504 ☒ B88A9132521491 **Type of Ice:** ☐ Wet ☒ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.4 **Cooler Temp Corrected (°C):** 2.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** TRUE **Date and Initials of Person Examining Contents:** CMB 2/11/14

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☐ Yes	☒ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC?	☐ Yes	☒ No	☐ N/A	12. No date/time on samples
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 02/11/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-17		
Lab Sample ID	10257348001-S		
Filename	U140226B_16		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	11.0	Dilution	NA
Dry Weight Extracted	9.08 g	Collected	02/04/2014 14:36
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 05:14

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	190.0	-----	0.26		2,3,7,8-TCDF-13C	2.00	86	Y
Total TCDF	5000.0	-----	0.26	E	2,3,7,8-TCDD-13C	2.00	91	
					1,2,3,7,8-PeCDF-13C	2.00	96	Y
2,3,7,8-TCDD	9.7	-----	0.17	Y	2,3,4,7,8-PeCDF-13C	2.00	92	Y
Total TCDD	290.0	-----	0.17	Y	1,2,3,7,8-PeCDD-13C	2.00	91	Y
					1,2,3,4,7,8-HxCDF-13C	2.00	102	
1,2,3,7,8-PeCDF	130.0	-----	0.51		1,2,3,6,7,8-HxCDF-13C	2.00	104	
2,3,4,7,8-PeCDF	250.0	-----	0.55		2,3,4,6,7,8-HxCDF-13C	2.00	101	
Total PeCDF	3100.0	-----	0.53		1,2,3,7,8,9-HxCDF-13C	2.00	95	
					1,2,3,4,7,8-HxCDD-13C	2.00	80	
1,2,3,7,8-PeCDD	34.0	-----	0.29		1,2,3,6,7,8-HxCDD-13C	2.00	73	
Total PeCDD	430.0	-----	0.29		1,2,3,4,6,7,8-HpCDF-13C	2.00	68	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66	
1,2,3,4,7,8-HxCDF	170.0	-----	0.34		1,2,3,4,6,7,8-HpCDD-13C	2.00	66	
1,2,3,6,7,8-HxCDF	-----	150	0.34	P	OCDD-13C	4.00	85	
2,3,4,6,7,8-HxCDF	190.0	-----	0.29					
1,2,3,7,8,9-HxCDF	33.0	-----	0.55		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	1700.0	-----	0.38		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	30.0	-----	0.40		2,3,7,8-TCDD-37Cl4	0.20	102	
1,2,3,6,7,8-HxCDD	71.0	-----	0.61					
1,2,3,7,8,9-HxCDD	62.0	-----	0.35					
Total HxCDD	850.0	-----	0.46					
1,2,3,4,6,7,8-HpCDF	480.0	-----	0.28		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	35.0	-----	0.44		Equivalence: 230 ng/Kg			
Total HpCDF	880.0	-----	0.36		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	1000.0	-----	0.77					
Total HpCDD	2000.0	-----	0.77					
OCDF	650.0	-----	0.20	Y				
OCDD	6900.0	-----	0.29	E				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-17		
Lab Sample ID	10257348001-S		
Filename	U140226B_16		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	11.0	Dilution	NA
Dry Weight Extracted	9.08 g	Collected	02/04/2014 14:36
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 05:14

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	190.0	0.26	0.10000	19.4520	19.4520	19.4520
Total TCDF	5000.0	0.26	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	9.7	0.17	1.00000	9.6688	9.6688	9.6688
Total TCDD	290.0	0.17	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	130.0	0.51	0.03000	3.8938	3.8938	3.8938
2,3,4,7,8-PeCDF	250.0	0.55	0.30000	75.6271	75.6271	75.6271
Total PeCDF	3100.0	0.53	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	34.0	0.29	1.00000	34.1050	34.1050	34.1050
Total PeCDD	430.0	0.29	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	170.0	0.34	0.10000	16.7288	16.7288	16.7288
1,2,3,6,7,8-HxCDF	ND	0.34	0.10000	15.0064	15.0064	15.0064
2,3,4,6,7,8-HxCDF	190.0	0.29	0.10000	19.3926	19.3926	19.3926
1,2,3,7,8,9-HxCDF	33.0	0.55	0.10000	3.3375	3.3375	3.3375
Total HxCDF	1700.0	0.38	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	30.0	0.40	0.10000	3.0218	3.0218	3.0218
1,2,3,6,7,8-HxCDD	71.0	0.61	0.10000	7.1371	7.1371	7.1371
1,2,3,7,8,9-HxCDD	62.0	0.35	0.10000	6.1690	6.1690	6.1690
Total HxCDD	850.0	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	480.0	0.28	0.01000	4.7697	4.7697	4.7697
1,2,3,4,7,8,9-HpCDF	35.0	0.44	0.01000	0.3527	0.3527	0.3527
Total HpCDF	880.0	0.36	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	1000.0	0.77	0.01000	10.4521	10.4521	10.4521
Total HpCDD	2000.0	0.77	0.00000	0.0000	0.0000	0.0000
OCDF	650.0	0.20	0.00030	0.1955	0.1955	0.1955
OCDD	6900.0	0.29	0.00030	2.0742	2.0742	2.0742
				230 ng/Kg	**230 ng/Kg**	**230 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-17.2		
Lab Sample ID	10257348002-S		
Filename	P140301A_08		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	7.8	Dilution	NA
Dry Weight Extracted	9.50 g	Collected	02/04/2014 14:49
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 12:12

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	270	-----	0.98		2,3,7,8-TCDF-13C	2.00	73	
Total TCDF	6500	-----	0.98	E	2,3,7,8-TCDD-13C	2.00	79	
					1,2,3,7,8-PeCDF-13C	2.00	66	
2,3,7,8-TCDD	15	-----	1.00		2,3,4,7,8-PeCDF-13C	2.00	64	
Total TCDD	400	-----	1.00		1,2,3,7,8-PeCDD-13C	2.00	65	
					1,2,3,4,7,8-HxCDF-13C	2.00	89	
1,2,3,7,8-PeCDF	200	-----	2.80		1,2,3,6,7,8-HxCDF-13C	2.00	85	
2,3,4,7,8-PeCDF	350	-----	3.50		2,3,4,6,7,8-HxCDF-13C	2.00	82	
Total PeCDF	3900	-----	3.20		1,2,3,7,8,9-HxCDF-13C	2.00	74	
					1,2,3,4,7,8-HxCDD-13C	2.00	81	
1,2,3,7,8-PeCDD	38	-----	1.20		1,2,3,6,7,8-HxCDD-13C	2.00	70	
Total PeCDD	480	-----	1.20		1,2,3,4,6,7,8-HpCDF-13C	2.00	67	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	65	
1,2,3,4,7,8-HxCDF	220	-----	1.50		1,2,3,4,6,7,8-HpCDD-13C	2.00	71	
1,2,3,6,7,8-HxCDF	130	-----	2.10		OCDD-13C	4.00	70	Y
2,3,4,6,7,8-HxCDF	270	-----	2.00					
1,2,3,7,8,9-HxCDF	42	-----	2.90		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	2300	-----	2.10		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	33	-----	1.90		2,3,7,8-TCDD-37Cl4	0.20	115	
1,2,3,6,7,8-HxCDD	70	-----	1.80					
1,2,3,7,8,9-HxCDD	55	-----	2.50					
Total HxCDD	790	-----	2.10					
1,2,3,4,6,7,8-HpCDF	810	-----	1.70		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	40	-----	3.40		Equivalence: 290 ng/Kg			
Total HpCDF	1200	-----	2.50		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	970	-----	3.50					
Total HpCDD	1900	-----	3.50					
OCDF	570	-----	2.20					
OCDD	6200	-----	2.70	E				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-17.2		
Lab Sample ID	10257348002-S		
Filename	P140301A_08		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	7.8	Dilution	NA
Dry Weight Extracted	9.50 g	Collected	02/04/2014 14:49
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 12:12

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	270	0.98	0.10000	27.3743	27.3743	27.3743
Total TCDF	6500	0.98	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	15	1.00	1.00000	14.5551	14.5551	14.5551
Total TCDD	400	1.00	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	200	2.8	0.03000	6.0424	6.0424	6.0424
2,3,4,7,8-PeCDF	350	3.5	0.30000	104.3071	104.3071	104.3071
Total PeCDF	3900	3.2	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	38	1.2	1.00000	37.5398	37.5398	37.5398
Total PeCDD	480	1.2	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	220	1.5	0.10000	21.7027	21.7027	21.7027
1,2,3,6,7,8-HxCDF	130	2.1	0.10000	12.7962	12.7962	12.7962
2,3,4,6,7,8-HxCDF	270	2.0	0.10000	26.9467	26.9467	26.9467
1,2,3,7,8,9-HxCDF	42	2.9	0.10000	4.1947	4.1947	4.1947
Total HxCDF	2300	2.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	33	1.9	0.10000	3.2895	3.2895	3.2895
1,2,3,6,7,8-HxCDD	70	1.8	0.10000	7.0085	7.0085	7.0085
1,2,3,7,8,9-HxCDD	55	2.5	0.10000	5.4564	5.4564	5.4564
Total HxCDD	790	2.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	810	1.7	0.01000	8.0837	8.0837	8.0837
1,2,3,4,7,8,9-HpCDF	40	3.4	0.01000	0.3984	0.3984	0.3984
Total HpCDF	1200	2.5	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	970	3.5	0.01000	9.6899	9.6899	9.6899
Total HpCDD	1900	3.5	0.00000	0.0000	0.0000	0.0000
OCDF	570	2.2	0.00030	0.1702	0.1702	0.1702
OCDD	6200	2.7	0.00030	1.8702	1.8702	1.8702
				290 ng/Kg	**290 ng/Kg**	**290 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-17.3		
Lab Sample ID	10257348003-S		
Filename	P140301A_09		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	9.0	Dilution	NA
Dry Weight Extracted	9.28 g	Collected	02/04/2014 15:02
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 12:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	260	-----	0.33		2,3,7,8-TCDF-13C	2.00	73	
Total TCDF	5100	-----	0.33	E	2,3,7,8-TCDD-13C	2.00	68	
					1,2,3,7,8-PeCDF-13C	2.00	61	
2,3,7,8-TCDD	-----	12	0.28	I	2,3,4,7,8-PeCDF-13C	2.00	71	
Total TCDD	430	-----	0.28		1,2,3,7,8-PeCDD-13C	2.00	77	
					1,2,3,4,7,8-HxCDF-13C	2.00	115	
1,2,3,7,8-PeCDF	180	-----	1.40		1,2,3,6,7,8-HxCDF-13C	2.00	107	
2,3,4,7,8-PeCDF	320	-----	0.60		2,3,4,6,7,8-HxCDF-13C	2.00	100	
Total PeCDF	3800	-----	1.00		1,2,3,7,8,9-HxCDF-13C	2.00	55	
					1,2,3,4,7,8-HxCDD-13C	2.00	98	
1,2,3,7,8-PeCDD	34	-----	0.38		1,2,3,6,7,8-HxCDD-13C	2.00	85	
Total PeCDD	410	-----	0.38		1,2,3,4,6,7,8-HpCDF-13C	2.00	70	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57	
1,2,3,4,7,8-HxCDF	190	-----	0.71		1,2,3,4,6,7,8-HpCDD-13C	2.00	71	
1,2,3,6,7,8-HxCDF	-----	200	0.53	P	OCDD-13C	4.00	49	Y
2,3,4,6,7,8-HxCDF	270	-----	0.60					
1,2,3,7,8,9-HxCDF	39	-----	0.68		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	2300	-----	0.63		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	34	-----	1.10		2,3,7,8-TCDD-37Cl4	0.20	133	
1,2,3,6,7,8-HxCDD	80	-----	0.95					
1,2,3,7,8,9-HxCDD	53	-----	0.87					
Total HxCDD	440	-----	0.98					
1,2,3,4,6,7,8-HpCDF	840	-----	0.63		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	41	-----	0.81		Equivalence: 280 ng/Kg			
Total HpCDF	1300	-----	0.72		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	1300	-----	0.80					
Total HpCDD	2600	-----	0.80					
OCDF	730	-----	1.40					
OCDD	9700	-----	1.20	E				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
E = Exceeds calibration range
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-17.3		
Lab Sample ID	10257348003-S		
Filename	P140301A_09		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	9.0	Dilution	NA
Dry Weight Extracted	9.28 g	Collected	02/04/2014 15:02
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 12:54

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	260	0.33	0.10000	25.6769	25.6769	25.6769
Total TCDF	5100	0.33	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.28	1.00000	11.8140	11.8140	11.8140
Total TCDD	430	0.28	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	180	1.4	0.03000	5.2986	5.2986	5.2986
2,3,4,7,8-PeCDF	320	0.60	0.30000	95.6536	95.6536	95.6536
Total PeCDF	3800	1.0	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	34	0.38	1.00000	34.3129	34.3129	34.3129
Total PeCDD	410	0.38	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	190	0.71	0.10000	18.6103	18.6103	18.6103
1,2,3,6,7,8-HxCDF	ND	0.53	0.10000	20.4754	20.4754	20.4754
2,3,4,6,7,8-HxCDF	270	0.60	0.10000	27.4135	27.4135	27.4135
1,2,3,7,8,9-HxCDF	39	0.68	0.10000	3.9382	3.9382	3.9382
Total HxCDF	2300	0.63	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	34	1.1	0.10000	3.4311	3.4311	3.4311
1,2,3,6,7,8-HxCDD	80	0.95	0.10000	7.9997	7.9997	7.9997
1,2,3,7,8,9-HxCDD	53	0.87	0.10000	5.2647	5.2647	5.2647
Total HxCDD	440	0.98	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	840	0.63	0.01000	8.3920	8.3920	8.3920
1,2,3,4,7,8,9-HpCDF	41	0.81	0.01000	0.4076	0.4076	0.4076
Total HpCDF	1300	0.72	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	1300	0.80	0.01000	12.5752	12.5752	12.5752
Total HpCDD	2600	0.80	0.00000	0.0000	0.0000	0.0000
OCDF	730	1.4	0.00030	0.2191	0.2191	0.2191
OCDD	9700	1.2	0.00030	2.9066	2.9066	2.9066
				280 ng/Kg	**280 ng/Kg**	**280 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-18		
Lab Sample ID	10257348004-S		
Filename	P140301A_10		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	9.5	Dilution	NA
Dry Weight Extracted	9.32 g	Collected	02/04/2014 13:00
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 13:37

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	570	-----	0.45	E	2,3,7,8-TCDF-13C	2.00	80	
Total TCDF	11000	-----	0.45	E	2,3,7,8-TCDD-13C	2.00	87	
					1,2,3,7,8-PeCDF-13C	2.00	78	
2,3,7,8-TCDD	28	-----	0.49		2,3,4,7,8-PeCDF-13C	2.00	75	
Total TCDD	1200	-----	0.49		1,2,3,7,8-PeCDD-13C	2.00	77	
					1,2,3,4,7,8-HxCDF-13C	2.00	99	
1,2,3,7,8-PeCDF	410	-----	0.77		1,2,3,6,7,8-HxCDF-13C	2.00	96	
2,3,4,7,8-PeCDF	800	-----	1.80		2,3,4,6,7,8-HxCDF-13C	2.00	91	
Total PeCDF	8500	-----	1.30		1,2,3,7,8,9-HxCDF-13C	2.00	72	
					1,2,3,4,7,8-HxCDD-13C	2.00	87	
1,2,3,7,8-PeCDD	90	-----	0.44		1,2,3,6,7,8-HxCDD-13C	2.00	77	
Total PeCDD	1400	-----	0.44		1,2,3,4,6,7,8-HpCDF-13C	2.00	75	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	68	
1,2,3,4,7,8-HxCDF	570	-----	0.90		1,2,3,4,6,7,8-HpCDD-13C	2.00	77	
1,2,3,6,7,8-HxCDF	420	-----	1.50		OCDD-13C	4.00	69	Y
2,3,4,6,7,8-HxCDF	730	-----	1.20					
1,2,3,7,8,9-HxCDF	100	-----	1.00		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	6000	-----	1.20		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	84	-----	1.40		2,3,7,8-TCDD-37Cl4	0.20	104	
1,2,3,6,7,8-HxCDD	160	-----	1.40					
1,2,3,7,8,9-HxCDD	130	-----	1.10					
Total HxCDD	2100	-----	1.30					
1,2,3,4,6,7,8-HpCDF	2400	-----	0.84	E	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	88	-----	1.30		Equivalence: 690 ng/Kg			
Total HpCDF	3100	-----	1.10	E	(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	1800	-----	2.00					
Total HpCDD	3600	-----	2.00					
OCDF	850	-----	1.10					
OCDD	11000	-----	1.80	E				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-18		
Lab Sample ID	10257348004-S		
Filename	P140301A_10		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	9.5	Dilution	NA
Dry Weight Extracted	9.32 g	Collected	02/04/2014 13:00
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 13:37

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	570	0.45	0.10000	56.6262	56.6262	56.6262
Total TCDF	11000	0.45	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	28	0.49	1.00000	28.3706	28.3706	28.3706
Total TCDD	1200	0.49	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	410	0.77	0.03000	12.2387	12.2387	12.2387
2,3,4,7,8-PeCDF	800	1.8	0.30000	239.9010	239.9010	239.9010
Total PeCDF	8500	1.3	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	90	0.44	1.00000	89.8140	89.8140	89.8140
Total PeCDD	1400	0.44	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	570	0.90	0.10000	56.8898	56.8898	56.8898
1,2,3,6,7,8-HxCDF	420	1.5	0.10000	41.5281	41.5281	41.5281
2,3,4,6,7,8-HxCDF	730	1.2	0.10000	73.2362	73.2362	73.2362
1,2,3,7,8,9-HxCDF	100	1.0	0.10000	9.9793	9.9793	9.9793
Total HxCDF	6000	1.2	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	84	1.4	0.10000	8.4178	8.4178	8.4178
1,2,3,6,7,8-HxCDD	160	1.4	0.10000	16.3243	16.3243	16.3243
1,2,3,7,8,9-HxCDD	130	1.1	0.10000	13.0199	13.0199	13.0199
Total HxCDD	2100	1.3	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	2400	0.84	0.01000	23.8558	23.8558	23.8558
1,2,3,4,7,8,9-HpCDF	88	1.3	0.01000	0.8779	0.8779	0.8779
Total HpCDF	3100	1.1	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	1800	2.0	0.01000	17.5083	17.5083	17.5083
Total HpCDD	3600	2.0	0.00000	0.0000	0.0000	0.0000
OCDF	850	1.1	0.00030	0.2556	0.2556	0.2556
OCDD	11000	1.8	0.00030	3.1712	3.1712	3.1712
				690 ng/Kg	**690 ng/Kg**	**690 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-19		
Lab Sample ID	10257348005-S		
Filename	P140301A_11		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	7.7	Dilution	NA
Dry Weight Extracted	9.51 g	Collected	02/04/2014 14:22
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 14:20

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	-----	370	0.18	P	2,3,7,8-TCDF-13C	2.00	73	
Total TCDF	6800	-----	0.18	E	2,3,7,8-TCDD-13C	2.00	79	
					1,2,3,7,8-PeCDF-13C	2.00	73	
2,3,7,8-TCDD	23	-----	0.18		2,3,4,7,8-PeCDF-13C	2.00	70	
Total TCDD	750	-----	0.18		1,2,3,7,8-PeCDD-13C	2.00	73	
					1,2,3,4,7,8-HxCDF-13C	2.00	92	
1,2,3,7,8-PeCDF	300	-----	0.44		1,2,3,6,7,8-HxCDF-13C	2.00	88	
2,3,4,7,8-PeCDF	610	-----	0.63		2,3,4,6,7,8-HxCDF-13C	2.00	82	
Total PeCDF	6500	-----	0.53		1,2,3,7,8,9-HxCDF-13C	2.00	52	
					1,2,3,4,7,8-HxCDD-13C	2.00	83	
1,2,3,7,8-PeCDD	72	-----	0.23		1,2,3,6,7,8-HxCDD-13C	2.00	71	
Total PeCDD	970	-----	0.23		1,2,3,4,6,7,8-HpCDF-13C	2.00	66	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56	
1,2,3,4,7,8-HxCDF	410	-----	0.67		1,2,3,4,6,7,8-HpCDD-13C	2.00	63	
1,2,3,6,7,8-HxCDF	390	-----	0.98		OCDD-13C	4.00	47	Y
2,3,4,6,7,8-HxCDF	600	-----	1.20					
1,2,3,7,8,9-HxCDF	83	-----	0.80		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	4500	-----	0.90		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	68	-----	1.60		2,3,7,8-TCDD-37Cl4	0.20	88	
1,2,3,6,7,8-HxCDD	120	-----	0.77					
1,2,3,7,8,9-HxCDD	99	-----	0.64					
Total HxCDD	1500	-----	1.00					
1,2,3,4,6,7,8-HpCDF	2100	-----	0.61		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	87	-----	0.96		Equivalence: 540 ng/Kg			
Total HpCDF	2700	-----	0.78		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	1200	-----	1.40					
Total HpCDD	2400	-----	1.40					
OCDF	690	-----	1.00					
OCDD	5600	-----	1.10					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
E = Exceeds calibration range
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-19		
Lab Sample ID	10257348005-S		
Filename	P140301A_11		
Injected By	BAL		
Total Amount Extracted	10.3 g	Matrix	Soil
% Moisture	7.7	Dilution	NA
Dry Weight Extracted	9.51 g	Collected	02/04/2014 14:22
ICAL ID	P130624	Received	02/11/2014 09:07
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID	BLANK-39465	Analyzed	03/01/2014 14:20

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	ND	0.18	0.10000	36.7462	36.7462	36.7462
Total TCDF	6800	0.18	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	23	0.18	1.00000	23.1303	23.1303	23.1303
Total TCDD	750	0.18	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	300	0.44	0.03000	9.1296	9.1296	9.1296
2,3,4,7,8-PeCDF	610	0.63	0.30000	182.6852	182.6852	182.6852
Total PeCDF	6500	0.53	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	72	0.23	1.00000	72.4801	72.4801	72.4801
Total PeCDD	970	0.23	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	410	0.67	0.10000	41.3009	41.3009	41.3009
1,2,3,6,7,8-HxCDF	390	0.98	0.10000	38.6998	38.6998	38.6998
2,3,4,6,7,8-HxCDF	600	1.2	0.10000	60.3981	60.3981	60.3981
1,2,3,7,8,9-HxCDF	83	0.80	0.10000	8.2573	8.2573	8.2573
Total HxCDF	4500	0.90	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	68	1.6	0.10000	6.7685	6.7685	6.7685
1,2,3,6,7,8-HxCDD	120	0.77	0.10000	12.2455	12.2455	12.2455
1,2,3,7,8,9-HxCDD	99	0.64	0.10000	9.9064	9.9064	9.9064
Total HxCDD	1500	1.00	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	2100	0.61	0.01000	20.7621	20.7621	20.7621
1,2,3,4,7,8,9-HpCDF	87	0.96	0.01000	0.8747	0.8747	0.8747
Total HpCDF	2700	0.78	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	1200	1.4	0.01000	11.6360	11.6360	11.6360
Total HpCDD	2400	1.4	0.00000	0.0000	0.0000	0.0000
OCDF	690	1.0	0.00030	0.2064	0.2064	0.2064
OCDD	5600	1.1	0.00030	1.6893	1.6893	1.6893
				540 ng/Kg	**540 ng/Kg**	**540 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-20		
Lab Sample ID	10257348006-S		
Filename	U140304B_07		
Injected By	SMT		
Total Amount Extracted	10.0 g	Matrix	Soil
% Moisture	15.1	Dilution	NA
Dry Weight Extracted	8.49 g	Collected	02/04/2014 11:46
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 21:10

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	9.10	-----	0.16		2,3,7,8-TCDF-13C	2.00	96	
Total TCDF	240.00	-----	0.16		2,3,7,8-TCDD-13C	2.00	100	
					1,2,3,7,8-PeCDF-13C	2.00	107	
2,3,7,8-TCDD	0.40	-----	0.16	J	2,3,4,7,8-PeCDF-13C	2.00	83	Y
Total TCDD	8.50	-----	0.16		1,2,3,7,8-PeCDD-13C	2.00	113	
					1,2,3,4,7,8-HxCDF-13C	2.00	89	
1,2,3,7,8-PeCDF	9.60	-----	0.25		1,2,3,6,7,8-HxCDF-13C	2.00	97	
2,3,4,7,8-PeCDF	21.00	-----	0.27		2,3,4,6,7,8-HxCDF-13C	2.00	103	
Total PeCDF	270.00	-----	0.26		1,2,3,7,8,9-HxCDF-13C	2.00	94	
					1,2,3,4,7,8-HxCDD-13C	2.00	81	
1,2,3,7,8-PeCDD	-----	2.3	0.15	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	80	
Total PeCDD	18.00	-----	0.15		1,2,3,4,6,7,8-HpCDF-13C	2.00	80	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	81	
1,2,3,4,7,8-HxCDF	16.00	-----	0.38		1,2,3,4,6,7,8-HpCDD-13C	2.00	89	
1,2,3,6,7,8-HxCDF	18.00	-----	0.26		OCDD-13C	4.00	77	
2,3,4,6,7,8-HxCDF	20.00	-----	0.28					
1,2,3,7,8,9-HxCDF	3.30	-----	0.29	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	200.00	-----	0.30		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	2.50	-----	0.37	J	2,3,7,8-TCDD-37Cl4	0.20	100	
1,2,3,6,7,8-HxCDD	7.20	-----	0.52					
1,2,3,7,8,9-HxCDD	4.80	-----	0.28	J				
Total HxCDD	64.00	-----	0.39					
1,2,3,4,6,7,8-HpCDF	72.00	-----	0.16		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.90	-----	0.33	J	Equivalence: 19 ng/Kg			
Total HpCDF	120.00	-----	0.24		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	100.00	-----	0.44					
Total HpCDD	190.00	-----	0.44					
OCDF	62.00	-----	0.30					
OCDD	670.00	-----	0.39					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-20		
Lab Sample ID	10257348006-S		
Filename	U140304B_07		
Injected By	SMT		
Total Amount Extracted	10.0 g	Matrix	Soil
% Moisture	15.1	Dilution	NA
Dry Weight Extracted	8.49 g	Collected	02/04/2014 11:46
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 21:10

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	9.10	0.16	0.10000	0.9118	0.9118	0.9118
Total TCDF	240.00	0.16	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	0.40	0.16	1.00000	0.4016	0.4016	0.4016
Total TCDD	8.50	0.16	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	9.60	0.25	0.03000	0.2878	0.2878	0.2878
2,3,4,7,8-PeCDF	21.00	0.27	0.30000	6.3737	6.3737	6.3737
Total PeCDF	270.00	0.26	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.15	1.00000	2.3376	2.3376	2.3376
Total PeCDD	18.00	0.15	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	16.00	0.38	0.10000	1.6158	1.6158	1.6158
1,2,3,6,7,8-HxCDF	18.00	0.26	0.10000	1.7658	1.7658	1.7658
2,3,4,6,7,8-HxCDF	20.00	0.28	0.10000	1.9601	1.9601	1.9601
1,2,3,7,8,9-HxCDF	3.30	0.29	0.10000	0.3292	0.3292	0.3292
Total HxCDF	200.00	0.30	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	2.50	0.37	0.10000	0.2476	0.2476	0.2476
1,2,3,6,7,8-HxCDD	7.20	0.52	0.10000	0.7186	0.7186	0.7186
1,2,3,7,8,9-HxCDD	4.80	0.28	0.10000	0.4806	0.4806	0.4806
Total HxCDD	64.00	0.39	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	72.00	0.16	0.01000	0.7244	0.7244	0.7244
1,2,3,4,7,8,9-HpCDF	3.90	0.33	0.01000	0.0394	0.0394	0.0394
Total HpCDF	120.00	0.24	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	100.00	0.44	0.01000	1.0448	1.0448	1.0448
Total HpCDD	190.00	0.44	0.00000	0.0000	0.0000	0.0000
OCDF	62.00	0.30	0.00030	0.0186	0.0186	0.0186
OCDD	670.00	0.39	0.00030	0.2002	0.2002	0.2002
				19 ng/Kg	**19 ng/Kg**	**19 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-21		
Lab Sample ID	10257348007-S		
Filename	U140304B_08		
Injected By	SMT		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	11.2	Dilution	NA
Dry Weight Extracted	9.32 g	Collected	02/04/2014 12:26
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 21:54

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	8.5	-----	0.32		2,3,7,8-TCDF-13C	2.00	97	
Total TCDF	220.0	-----	0.32		2,3,7,8-TCDD-13C	2.00	101	
					1,2,3,7,8-PeCDF-13C	2.00	110	
2,3,7,8-TCDD	-----	0.35	0.26	IJ	2,3,4,7,8-PeCDF-13C	2.00	88	Y
Total TCDD	8.8	-----	0.26		1,2,3,7,8-PeCDD-13C	2.00	114	
					1,2,3,4,7,8-HxCDF-13C	2.00	94	
1,2,3,7,8-PeCDF	8.6	-----	0.22		1,2,3,6,7,8-HxCDF-13C	2.00	98	
2,3,4,7,8-PeCDF	20.0	-----	0.22		2,3,4,6,7,8-HxCDF-13C	2.00	105	
Total PeCDF	230.0	-----	0.22		1,2,3,7,8,9-HxCDF-13C	2.00	93	
					1,2,3,4,7,8-HxCDD-13C	2.00	83	
1,2,3,7,8-PeCDD	2.2	-----	0.16	J	1,2,3,6,7,8-HxCDD-13C	2.00	80	
Total PeCDD	19.0	-----	0.16		1,2,3,4,6,7,8-HpCDF-13C	2.00	80	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	82	
1,2,3,4,7,8-HxCDF	14.0	-----	0.45		1,2,3,4,6,7,8-HpCDD-13C	2.00	90	
1,2,3,6,7,8-HxCDF	15.0	-----	0.39		OCDD-13C	4.00	76	
2,3,4,6,7,8-HxCDF	19.0	-----	0.31					
1,2,3,7,8,9-HxCDF	-----	2.60	0.39	IJ	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	180.0	-----	0.38		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	2.1	-----	0.40	J	2,3,7,8-TCDD-37Cl4	0.20	99	
1,2,3,6,7,8-HxCDD	6.5	-----	0.37					
1,2,3,7,8,9-HxCDD	5.1	-----	0.39	J				
Total HxCDD	64.0	-----	0.39					
1,2,3,4,6,7,8-HpCDF	68.0	-----	0.28		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.4	-----	0.37	J	Equivalence: 18 ng/Kg			
Total HpCDF	110.0	-----	0.32		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	94.0	-----	0.40					
Total HpCDD	170.0	-----	0.40					
OCDF	58.0	-----	0.44					
OCDD	620.0	-----	0.58					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-21		
Lab Sample ID	10257348007-S		
Filename	U140304B_08		
Injected By	SMT		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	11.2	Dilution	NA
Dry Weight Extracted	9.32 g	Collected	02/04/2014 12:26
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 21:54

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	8.5	0.32	0.10000	0.8454	0.8454	0.8454
Total TCDF	220.0	0.32	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.26	1.00000	0.3533	0.3533	0.3533
Total TCDD	8.8	0.26	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	8.6	0.22	0.03000	0.2590	0.2590	0.2590
2,3,4,7,8-PeCDF	20.0	0.22	0.30000	5.9384	5.9384	5.9384
Total PeCDF	230.0	0.22	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	2.2	0.16	1.00000	2.2467	2.2467	2.2467
Total PeCDD	19.0	0.16	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	14.0	0.45	0.10000	1.4476	1.4476	1.4476
1,2,3,6,7,8-HxCDF	15.0	0.39	0.10000	1.5036	1.5036	1.5036
2,3,4,6,7,8-HxCDF	19.0	0.31	0.10000	1.8663	1.8663	1.8663
1,2,3,7,8,9-HxCDF	ND	0.39	0.10000	0.2636	0.2636	0.2636
Total HxCDF	180.0	0.38	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	2.1	0.40	0.10000	0.2106	0.2106	0.2106
1,2,3,6,7,8-HxCDD	6.5	0.37	0.10000	0.6453	0.6453	0.6453
1,2,3,7,8,9-HxCDD	5.1	0.39	0.10000	0.5101	0.5101	0.5101
Total HxCDD	64.0	0.39	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	68.0	0.28	0.01000	0.6767	0.6767	0.6767
1,2,3,4,7,8,9-HpCDF	3.4	0.37	0.01000	0.0339	0.0339	0.0339
Total HpCDF	110.0	0.32	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	94.0	0.40	0.01000	0.9413	0.9413	0.9413
Total HpCDD	170.0	0.40	0.00000	0.0000	0.0000	0.0000
OCDF	58.0	0.44	0.00030	0.0173	0.0173	0.0173
OCDD	620.0	0.58	0.00030	0.1846	0.1846	0.1846
				18 ng/Kg	**18 ng/Kg**	**18 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-22		
Lab Sample ID	10257348008-S		
Filename	U140226B_17		
Injected By	BAL		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	9.9	Dilution	NA
Dry Weight Extracted	9.46 g	Collected	02/04/2014 10:15
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 06:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	15.0	-----	0.27		2,3,7,8-TCDF-13C	2.00	87	Y
Total TCDF	440.0	-----	0.27		2,3,7,8-TCDD-13C	2.00	91	
					1,2,3,7,8-PeCDF-13C	2.00	94	Y
2,3,7,8-TCDD	1.1	-----	0.14	Y	2,3,4,7,8-PeCDF-13C	2.00	89	Y
Total TCDD	45.0	-----	0.14	Y	1,2,3,7,8-PeCDD-13C	2.00	94	Y
					1,2,3,4,7,8-HxCDF-13C	2.00	102	
1,2,3,7,8-PeCDF	15.0	-----	0.23		1,2,3,6,7,8-HxCDF-13C	2.00	100	
2,3,4,7,8-PeCDF	36.0	-----	0.17		2,3,4,6,7,8-HxCDF-13C	2.00	99	
Total PeCDF	450.0	-----	0.20		1,2,3,7,8,9-HxCDF-13C	2.00	91	
					1,2,3,4,7,8-HxCDD-13C	2.00	83	
1,2,3,7,8-PeCDD	4.8	-----	0.30	J	1,2,3,6,7,8-HxCDD-13C	2.00	75	
Total PeCDD	89.0	-----	0.30		1,2,3,4,6,7,8-HpCDF-13C	2.00	64	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59	
1,2,3,4,7,8-HxCDF	31.0	-----	0.22		1,2,3,4,6,7,8-HpCDD-13C	2.00	60	
1,2,3,6,7,8-HxCDF	-----	31	0.20	P	OCDD-13C	4.00	63	
2,3,4,6,7,8-HxCDF	39.0	-----	0.15					
1,2,3,7,8,9-HxCDF	6.8	-----	0.18		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	380.0	-----	0.19		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	5.7	-----	0.37		2,3,7,8-TCDD-37Cl4	0.20	101	
1,2,3,6,7,8-HxCDD	19.0	-----	0.32					
1,2,3,7,8,9-HxCDD	12.0	-----	0.36					
Total HxCDD	220.0	-----	0.35					
1,2,3,4,6,7,8-HpCDF	150.0	-----	0.24		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	9.7	-----	0.20		Equivalence: 39 ng/Kg			
Total HpCDF	290.0	-----	0.22		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	300.0	-----	0.66					
Total HpCDD	560.0	-----	0.66					
OCDF	170.0	-----	0.48	Y				
OCDD	3000.0	-----	0.48					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-22		
Lab Sample ID	10257348008-S		
Filename	U140226B_17		
Injected By	BAL		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	9.9	Dilution	NA
Dry Weight Extracted	9.46 g	Collected	02/04/2014 10:15
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 06:01

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	15.0	0.27	0.10000	1.5439	1.5439	1.5439
Total TCDF	440.0	0.27	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	1.1	0.14	1.00000	1.0975	1.0975	1.0975
Total TCDD	45.0	0.14	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	15.0	0.23	0.03000	0.4583	0.4583	0.4583
2,3,4,7,8-PeCDF	36.0	0.17	0.30000	10.9110	10.9110	10.9110
Total PeCDF	450.0	0.20	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	4.8	0.30	1.00000	4.7781	4.7781	4.7781
Total PeCDD	89.0	0.30	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	31.0	0.22	0.10000	3.0775	3.0775	3.0775
1,2,3,6,7,8-HxCDF	ND	0.20	0.10000	3.1058	3.1058	3.1058
2,3,4,6,7,8-HxCDF	39.0	0.15	0.10000	3.8650	3.8650	3.8650
1,2,3,7,8,9-HxCDF	6.8	0.18	0.10000	0.6755	0.6755	0.6755
Total HxCDF	380.0	0.19	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	5.7	0.37	0.10000	0.5663	0.5663	0.5663
1,2,3,6,7,8-HxCDD	19.0	0.32	0.10000	1.9266	1.9266	1.9266
1,2,3,7,8,9-HxCDD	12.0	0.36	0.10000	1.2018	1.2018	1.2018
Total HxCDD	220.0	0.35	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	150.0	0.24	0.01000	1.4927	1.4927	1.4927
1,2,3,4,7,8,9-HpCDF	9.7	0.20	0.01000	0.0974	0.0974	0.0974
Total HpCDF	290.0	0.22	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	300.0	0.66	0.01000	2.9534	2.9534	2.9534
Total HpCDD	560.0	0.66	0.00000	0.0000	0.0000	0.0000
OCDF	170.0	0.48	0.00030	0.0519	0.0519	0.0519
OCDD	3000.0	0.48	0.00030	0.8973	0.8973	0.8973
				39 ng/Kg	**39 ng/Kg**	**39 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-23		
Lab Sample ID	10257348009-S		
Filename	U140304B_09		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	11.6	Dilution	NA
Dry Weight Extracted	9.19 g	Collected	02/04/2014 10:23
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 22:39

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	8.6	-----	0.36		2,3,7,8-TCDF-13C	2.00	96	
Total TCDF	220.0	-----	0.36		2,3,7,8-TCDD-13C	2.00	99	
					1,2,3,7,8-PeCDF-13C	2.00	112	
2,3,7,8-TCDD	-----	0.43	0.40	IJ	2,3,4,7,8-PeCDF-13C	2.00	86	Y
Total TCDD	11.0	-----	0.40		1,2,3,7,8-PeCDD-13C	2.00	113	
					1,2,3,4,7,8-HxCDF-13C	2.00	93	
1,2,3,7,8-PeCDF	9.0	-----	0.15		1,2,3,6,7,8-HxCDF-13C	2.00	101	
2,3,4,7,8-PeCDF	19.0	-----	0.20		2,3,4,6,7,8-HxCDF-13C	2.00	105	
Total PeCDF	240.0	-----	0.18		1,2,3,7,8,9-HxCDF-13C	2.00	95	
					1,2,3,4,7,8-HxCDD-13C	2.00	87	
1,2,3,7,8-PeCDD	2.0	-----	0.15	J	1,2,3,6,7,8-HxCDD-13C	2.00	79	
Total PeCDD	26.0	-----	0.15		1,2,3,4,6,7,8-HpCDF-13C	2.00	80	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	82	
1,2,3,4,7,8-HxCDF	16.0	-----	0.48		1,2,3,4,6,7,8-HpCDD-13C	2.00	91	
1,2,3,6,7,8-HxCDF	16.0	-----	0.24		OCDD-13C	4.00	77	
2,3,4,6,7,8-HxCDF	18.0	-----	0.21					
1,2,3,7,8,9-HxCDF	3.6	-----	0.31	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	190.0	-----	0.31		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	2.0	-----	0.35	J	2,3,7,8-TCDD-37Cl4	0.20	97	
1,2,3,6,7,8-HxCDD	7.3	-----	0.37					
1,2,3,7,8,9-HxCDD	4.8	-----	0.32	J				
Total HxCDD	66.0	-----	0.35					
1,2,3,4,6,7,8-HpCDF	69.0	-----	0.30		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.5	-----	0.45	J	Equivalence: 18 ng/Kg			
Total HpCDF	110.0	-----	0.37		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	97.0	-----	0.50					
Total HpCDD	180.0	-----	0.50					
OCDF	57.0	-----	0.96					
OCDD	610.0	-----	0.59					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-23		
Lab Sample ID	10257348009-S		
Filename	U140304B_09		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	11.6	Dilution	NA
Dry Weight Extracted	9.19 g	Collected	02/04/2014 10:23
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 22:39

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	8.6	0.36	0.10000	0.8634	0.8634	0.8634
Total TCDF	220.0	0.36	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.40	1.00000	0.4348	0.4348	0.4348
Total TCDD	11.0	0.40	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	9.0	0.15	0.03000	0.2689	0.2689	0.2689
2,3,4,7,8-PeCDF	19.0	0.20	0.30000	5.7835	5.7835	5.7835
Total PeCDF	240.0	0.18	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	2.0	0.15	1.00000	2.0346	2.0346	2.0346
Total PeCDD	26.0	0.15	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	16.0	0.48	0.10000	1.6048	1.6048	1.6048
1,2,3,6,7,8-HxCDF	16.0	0.24	0.10000	1.5691	1.5691	1.5691
2,3,4,6,7,8-HxCDF	18.0	0.21	0.10000	1.8447	1.8447	1.8447
1,2,3,7,8,9-HxCDF	3.6	0.31	0.10000	0.3598	0.3598	0.3598
Total HxCDF	190.0	0.31	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	2.0	0.35	0.10000	0.2037	0.2037	0.2037
1,2,3,6,7,8-HxCDD	7.3	0.37	0.10000	0.7264	0.7264	0.7264
1,2,3,7,8,9-HxCDD	4.8	0.32	0.10000	0.4823	0.4823	0.4823
Total HxCDD	66.0	0.35	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	69.0	0.30	0.01000	0.6929	0.6929	0.6929
1,2,3,4,7,8,9-HpCDF	3.5	0.45	0.01000	0.0351	0.0351	0.0351
Total HpCDF	110.0	0.37	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	97.0	0.50	0.01000	0.9730	0.9730	0.9730
Total HpCDD	180.0	0.50	0.00000	0.0000	0.0000	0.0000
OCDF	57.0	0.96	0.00030	0.0171	0.0171	0.0171
OCDD	610.0	0.59	0.00030	0.1825	0.1825	0.1825
				18 ng/Kg	**18 ng/Kg**	**18 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-24		
Lab Sample ID	10257348010-S		
Filename	U140304B_10		
Injected By	SMT		
Total Amount Extracted	11.4 g	Matrix	Soil
% Moisture	14.5	Dilution	NA
Dry Weight Extracted	9.75 g	Collected	02/04/2014 10:50
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 23:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	8.2	-----	0.47		2,3,7,8-TCDF-13C	2.00	97	
Total TCDF	210.0	-----	0.47		2,3,7,8-TCDD-13C	2.00	100	
					1,2,3,7,8-PeCDF-13C	2.00	111	
2,3,7,8-TCDD	ND	-----	0.39		2,3,4,7,8-PeCDF-13C	2.00	85	Y
Total TCDD	9.0	-----	0.39		1,2,3,7,8-PeCDD-13C	2.00	114	
					1,2,3,4,7,8-HxCDF-13C	2.00	98	
1,2,3,7,8-PeCDF	8.3	-----	0.26		1,2,3,6,7,8-HxCDF-13C	2.00	97	
2,3,4,7,8-PeCDF	20.0	-----	0.20		2,3,4,6,7,8-HxCDF-13C	2.00	107	
Total PeCDF	230.0	-----	0.23		1,2,3,7,8,9-HxCDF-13C	2.00	96	
					1,2,3,4,7,8-HxCDD-13C	2.00	86	
1,2,3,7,8-PeCDD	2.1	-----	0.16	J	1,2,3,6,7,8-HxCDD-13C	2.00	77	
Total PeCDD	22.0	-----	0.16		1,2,3,4,6,7,8-HpCDF-13C	2.00	80	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	82	
1,2,3,4,7,8-HxCDF	13.0	-----	0.45		1,2,3,4,6,7,8-HpCDD-13C	2.00	90	
1,2,3,6,7,8-HxCDF	15.0	-----	0.38		OCDD-13C	4.00	76	
2,3,4,6,7,8-HxCDF	18.0	-----	0.38					
1,2,3,7,8,9-HxCDF	-----	2.5	0.19	IJ	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	170.0	-----	0.35		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	-----	2.0	0.13	IJ	2,3,7,8-TCDD-37Cl4	0.20	104	
1,2,3,6,7,8-HxCDD	6.9	-----	0.35					
1,2,3,7,8,9-HxCDD	4.8	-----	0.45	J				
Total HxCDD	61.0	-----	0.31					
1,2,3,4,6,7,8-HpCDF	66.0	-----	0.30		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.5	-----	0.34	J	Equivalence: 17 ng/Kg			
Total HpCDF	110.0	-----	0.32		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	92.0	-----	0.50					
Total HpCDD	170.0	-----	0.50					
OCDF	54.0	-----	0.68					
OCDD	580.0	-----	0.58					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-24		
Lab Sample ID	10257348010-S		
Filename	U140304B_10		
Injected By	SMT		
Total Amount Extracted	11.4 g	Matrix	Soil
% Moisture	14.5	Dilution	NA
Dry Weight Extracted	9.75 g	Collected	02/04/2014 10:50
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/04/2014 23:24

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	8.2	0.47	0.10000	0.8214	0.8214	0.8214
Total TCDF	210.0	0.47	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.39	1.00000	0.0000	0.1959	0.3918
Total TCDD	9.0	0.39	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	8.3	0.26	0.03000	0.2504	0.2504	0.2504
2,3,4,7,8-PeCDF	20.0	0.20	0.30000	5.9093	5.9093	5.9093
Total PeCDF	230.0	0.23	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	2.1	0.16	1.00000	2.1120	2.1120	2.1120
Total PeCDD	22.0	0.16	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	13.0	0.45	0.10000	1.2935	1.2935	1.2935
1,2,3,6,7,8-HxCDF	15.0	0.38	0.10000	1.5347	1.5347	1.5347
2,3,4,6,7,8-HxCDF	18.0	0.38	0.10000	1.8307	1.8307	1.8307
1,2,3,7,8,9-HxCDF	ND	0.19	0.10000	0.2511	0.2511	0.2511
Total HxCDF	170.0	0.35	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	ND	0.13	0.10000	0.1992	0.1992	0.1992
1,2,3,6,7,8-HxCDD	6.9	0.35	0.10000	0.6950	0.6950	0.6950
1,2,3,7,8,9-HxCDD	4.8	0.45	0.10000	0.4797	0.4797	0.4797
Total HxCDD	61.0	0.31	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	66.0	0.30	0.01000	0.6597	0.6597	0.6597
1,2,3,4,7,8,9-HpCDF	3.5	0.34	0.01000	0.0355	0.0355	0.0355
Total HpCDF	110.0	0.32	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	92.0	0.50	0.01000	0.9189	0.9189	0.9189
Total HpCDD	170.0	0.50	0.00000	0.0000	0.0000	0.0000
OCDF	54.0	0.68	0.00030	0.0161	0.0161	0.0161
OCDD	580.0	0.58	0.00030	0.1740	0.1740	0.1740
				17 ng/Kg	**17 ng/Kg**	**18 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-25		
Lab Sample ID	10257348011-S		
Filename	U140304B_11		
Injected By	SMT		
Total Amount Extracted	10.0 g	Matrix	Soil
% Moisture	14.9	Dilution	NA
Dry Weight Extracted	8.51 g	Collected	02/04/2014 11:15
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 00:09

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	9.5	-----	0.48		2,3,7,8-TCDF-13C	2.00	97	
Total TCDF	240.0	-----	0.48		2,3,7,8-TCDD-13C	2.00	102	
					1,2,3,7,8-PeCDF-13C	2.00	111	
2,3,7,8-TCDD	ND	-----	0.42		2,3,4,7,8-PeCDF-13C	2.00	86	Y
Total TCDD	10.0	-----	0.42		1,2,3,7,8-PeCDD-13C	2.00	116	
					1,2,3,4,7,8-HxCDF-13C	2.00	95	
1,2,3,7,8-PeCDF	9.5	-----	0.36		1,2,3,6,7,8-HxCDF-13C	2.00	93	
2,3,4,7,8-PeCDF	22.0	-----	0.43		2,3,4,6,7,8-HxCDF-13C	2.00	104	
Total PeCDF	260.0	-----	0.40		1,2,3,7,8,9-HxCDF-13C	2.00	96	
					1,2,3,4,7,8-HxCDD-13C	2.00	86	
1,2,3,7,8-PeCDD	2.5	-----	0.25	J	1,2,3,6,7,8-HxCDD-13C	2.00	79	
Total PeCDD	26.0	-----	0.25		1,2,3,4,6,7,8-HpCDF-13C	2.00	81	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	83	
1,2,3,4,7,8-HxCDF	15.0	-----	0.64		1,2,3,4,6,7,8-HpCDD-13C	2.00	91	
1,2,3,6,7,8-HxCDF	18.0	-----	0.61		OCDD-13C	4.00	75	
2,3,4,6,7,8-HxCDF	21.0	-----	0.53					
1,2,3,7,8,9-HxCDF	3.5	-----	0.59	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	210.0	-----	0.59		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	2.7	-----	1.00	J	2,3,7,8-TCDD-37Cl4	0.20	102	
1,2,3,6,7,8-HxCDD	7.6	-----	0.44					
1,2,3,7,8,9-HxCDD	-----	4.6	0.69	IJ				
Total HxCDD	65.0	-----	0.72					
1,2,3,4,6,7,8-HpCDF	74.0	-----	0.19		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.5	-----	0.40	J	Equivalence: 20 ng/Kg			
Total HpCDF	110.0	-----	0.30		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	110.0	-----	0.50					
Total HpCDD	190.0	-----	0.50					
OCDF	61.0	-----	0.86					
OCDD	660.0	-----	0.74					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-25		
Lab Sample ID	10257348011-S		
Filename	U140304B_11		
Injected By	SMT		
Total Amount Extracted	10.0 g	Matrix	Soil
% Moisture	14.9	Dilution	NA
Dry Weight Extracted	8.51 g	Collected	02/04/2014 11:15
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 00:09

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	9.5	0.48	0.10000	0.9458	0.9458	0.9458
Total TCDF	240.0	0.48	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.42	1.00000	0.0000	0.2122	0.4243
Total TCDD	10.0	0.42	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	9.5	0.36	0.03000	0.2842	0.2842	0.2842
2,3,4,7,8-PeCDF	22.0	0.43	0.30000	6.7302	6.7302	6.7302
Total PeCDF	260.0	0.40	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	2.5	0.25	1.00000	2.4768	2.4768	2.4768
Total PeCDD	26.0	0.25	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	15.0	0.64	0.10000	1.5121	1.5121	1.5121
1,2,3,6,7,8-HxCDF	18.0	0.61	0.10000	1.8005	1.8005	1.8005
2,3,4,6,7,8-HxCDF	21.0	0.53	0.10000	2.0779	2.0779	2.0779
1,2,3,7,8,9-HxCDF	3.5	0.59	0.10000	0.3544	0.3544	0.3544
Total HxCDF	210.0	0.59	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	2.7	1.0	0.10000	0.2728	0.2728	0.2728
1,2,3,6,7,8-HxCDD	7.6	0.44	0.10000	0.7609	0.7609	0.7609
1,2,3,7,8,9-HxCDD	ND	0.69	0.10000	0.4614	0.4614	0.4614
Total HxCDD	65.0	0.72	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	74.0	0.19	0.01000	0.7394	0.7394	0.7394
1,2,3,4,7,8,9-HpCDF	3.5	0.40	0.01000	0.0346	0.0346	0.0346
Total HpCDF	110.0	0.30	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	110.0	0.50	0.01000	1.0506	1.0506	1.0506
Total HpCDD	190.0	0.50	0.00000	0.0000	0.0000	0.0000
OCDF	61.0	0.86	0.00030	0.0182	0.0182	0.0182
OCDD	660.0	0.74	0.00030	0.1976	0.1976	0.1976
				20 ng/Kg	**20 ng/Kg**	**20 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-26		
Lab Sample ID	10257348012-S		
Filename	U140226B_18		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	25.1	Dilution	NA
Dry Weight Extracted	7.64 g	Collected	02/04/2014 10:20
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 06:49

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	12.0	-----	0.25		2,3,7,8-TCDF-13C	2.00	82	Y
Total TCDF	290.0	-----	0.25		2,3,7,8-TCDD-13C	2.00	90	
					1,2,3,7,8-PeCDF-13C	2.00	98	Y
2,3,7,8-TCDD	-----	0.74	0.23	IJY	2,3,4,7,8-PeCDF-13C	2.00	89	Y
Total TCDD	16.0	-----	0.23	Y	1,2,3,7,8-PeCDD-13C	2.00	95	Y
					1,2,3,4,7,8-HxCDF-13C	2.00	96	
1,2,3,7,8-PeCDF	12.0	-----	0.24		1,2,3,6,7,8-HxCDF-13C	2.00	102	
2,3,4,7,8-PeCDF	27.0	-----	0.42		2,3,4,6,7,8-HxCDF-13C	2.00	95	
Total PeCDF	270.0	-----	0.33		1,2,3,7,8,9-HxCDF-13C	2.00	92	
					1,2,3,4,7,8-HxCDD-13C	2.00	80	
1,2,3,7,8-PeCDD	-----	3.80	0.20	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	72	
Total PeCDD	36.0	-----	0.20		1,2,3,4,6,7,8-HpCDF-13C	2.00	67	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	64	
1,2,3,4,7,8-HxCDF	20.0	-----	0.34		1,2,3,4,6,7,8-HpCDD-13C	2.00	65	
1,2,3,6,7,8-HxCDF	-----	21.00	0.27	P	OCDD-13C	4.00	74	
2,3,4,6,7,8-HxCDF	30.0	-----	0.32					
1,2,3,7,8,9-HxCDF	3.6	-----	0.35	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	290.0	-----	0.32		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	5.6	-----	0.35	J	2,3,7,8-TCDD-37Cl4	0.20	106	
1,2,3,6,7,8-HxCDD	22.0	-----	0.59					
1,2,3,7,8,9-HxCDD	12.0	-----	0.38					
Total HxCDD	160.0	-----	0.44					
1,2,3,4,6,7,8-HpCDF	140.0	-----	0.30		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	7.3	-----	0.46		Equivalence: 33 ng/Kg			
Total HpCDF	330.0	-----	0.38		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	440.0	-----	0.56					
Total HpCDD	760.0	-----	0.56					
OCDF	250.0	-----	0.36	Y				
OCDD	5400.0	-----	0.51					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-26		
Lab Sample ID	10257348012-S		
Filename	U140226B_18		
Injected By	BAL		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	25.1	Dilution	NA
Dry Weight Extracted	7.64 g	Collected	02/04/2014 10:20
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140226B_06 & U140226B_20	Extracted	02/24/2014 21:00
Method Blank ID	BLANK-39446	Analyzed	02/27/2014 06:49

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	12.0	0.25	0.10000	1.1923	1.1923	1.1923
Total TCDF	290.0	0.25	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.23	1.00000	0.7429	0.7429	0.7429
Total TCDD	16.0	0.23	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	12.0	0.24	0.03000	0.3468	0.3468	0.3468
2,3,4,7,8-PeCDF	27.0	0.42	0.30000	8.1524	8.1524	8.1524
Total PeCDF	270.0	0.33	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.20	1.00000	3.8311	3.8311	3.8311
Total PeCDD	36.0	0.20	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	20.0	0.34	0.10000	2.0023	2.0023	2.0023
1,2,3,6,7,8-HxCDF	ND	0.27	0.10000	2.1271	2.1271	2.1271
2,3,4,6,7,8-HxCDF	30.0	0.32	0.10000	2.9534	2.9534	2.9534
1,2,3,7,8,9-HxCDF	3.6	0.35	0.10000	0.3650	0.3650	0.3650
Total HxCDF	290.0	0.32	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	5.6	0.35	0.10000	0.5628	0.5628	0.5628
1,2,3,6,7,8-HxCDD	22.0	0.59	0.10000	2.2083	2.2083	2.2083
1,2,3,7,8,9-HxCDD	12.0	0.38	0.10000	1.1817	1.1817	1.1817
Total HxCDD	160.0	0.44	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	140.0	0.30	0.01000	1.3929	1.3929	1.3929
1,2,3,4,7,8,9-HpCDF	7.3	0.46	0.01000	0.0729	0.0729	0.0729
Total HpCDF	330.0	0.38	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	440.0	0.56	0.01000	4.4479	4.4479	4.4479
Total HpCDD	760.0	0.56	0.00000	0.0000	0.0000	0.0000
OCDF	250.0	0.36	0.00030	0.0756	0.0756	0.0756
OCDD	5400.0	0.51	0.00030	1.6071	1.6071	1.6071
				33 ng/Kg	**33 ng/Kg**	**33 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-26.2		
Lab Sample ID	10257348013-S		
Filename	U140304B_12		
Injected By	SMT		
Total Amount Extracted	10.9 g	Matrix	Soil
% Moisture	18.2	Dilution	NA
Dry Weight Extracted	8.92 g	Collected	02/04/2014 10:59
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 00:53

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	8.60	-----	0.39		2,3,7,8-TCDF-13C	2.00	98	
Total TCDF	230.00	-----	0.39		2,3,7,8-TCDD-13C	2.00	102	
					1,2,3,7,8-PeCDF-13C	2.00	109	
2,3,7,8-TCDD	0.41	-----	0.32	J	2,3,4,7,8-PeCDF-13C	2.00	85	Y
Total TCDD	13.00	-----	0.32		1,2,3,7,8-PeCDD-13C	2.00	114	
					1,2,3,4,7,8-HxCDF-13C	2.00	93	
1,2,3,7,8-PeCDF	9.40	-----	0.24		1,2,3,6,7,8-HxCDF-13C	2.00	94	
2,3,4,7,8-PeCDF	21.00	-----	0.21		2,3,4,6,7,8-HxCDF-13C	2.00	101	
Total PeCDF	260.00	-----	0.23		1,2,3,7,8,9-HxCDF-13C	2.00	94	
					1,2,3,4,7,8-HxCDD-13C	2.00	83	
1,2,3,7,8-PeCDD	2.50	-----	0.36	J	1,2,3,6,7,8-HxCDD-13C	2.00	79	
Total PeCDD	24.00	-----	0.36		1,2,3,4,6,7,8-HpCDF-13C	2.00	78	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	82	
1,2,3,4,7,8-HxCDF	15.00	-----	0.40		1,2,3,4,6,7,8-HpCDD-13C	2.00	90	
1,2,3,6,7,8-HxCDF	16.00	-----	0.55		OCDD-13C	4.00	72	
2,3,4,6,7,8-HxCDF	19.00	-----	0.41					
1,2,3,7,8,9-HxCDF	3.20	-----	0.51	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	190.00	-----	0.47		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	2.70	-----	0.38	J	2,3,7,8-TCDD-37Cl4	0.20	100	
1,2,3,6,7,8-HxCDD	6.70	-----	0.41					
1,2,3,7,8,9-HxCDD	5.50	-----	0.43	J				
Total HxCDD	69.00	-----	0.40					
1,2,3,4,6,7,8-HpCDF	70.00	-----	0.31		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.30	-----	0.34	J	Equivalence: 19 ng/Kg			
Total HpCDF	110.00	-----	0.33		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	98.00	-----	0.37					
Total HpCDD	180.00	-----	0.37					
OCDF	59.00	-----	0.82					
OCDD	640.00	-----	0.76					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-26.2		
Lab Sample ID	10257348013-S		
Filename	U140304B_12		
Injected By	SMT		
Total Amount Extracted	10.9 g	Matrix	Soil
% Moisture	18.2	Dilution	NA
Dry Weight Extracted	8.92 g	Collected	02/04/2014 10:59
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 00:53

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	8.60	0.39	0.10000	0.8649	0.8649	0.8649
Total TCDF	230.00	0.39	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	0.41	0.32	1.00000	0.4072	0.4072	0.4072
Total TCDD	13.00	0.32	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	9.40	0.24	0.03000	0.2813	0.2813	0.2813
2,3,4,7,8-PeCDF	21.00	0.21	0.30000	6.2647	6.2647	6.2647
Total PeCDF	260.00	0.23	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	2.50	0.36	1.00000	2.5449	2.5449	2.5449
Total PeCDD	24.00	0.36	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	15.00	0.40	0.10000	1.5027	1.5027	1.5027
1,2,3,6,7,8-HxCDF	16.00	0.55	0.10000	1.6224	1.6224	1.6224
2,3,4,6,7,8-HxCDF	19.00	0.41	0.10000	1.9275	1.9275	1.9275
1,2,3,7,8,9-HxCDF	3.20	0.51	0.10000	0.3179	0.3179	0.3179
Total HxCDF	190.00	0.47	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	2.70	0.38	0.10000	0.2750	0.2750	0.2750
1,2,3,6,7,8-HxCDD	6.70	0.41	0.10000	0.6667	0.6667	0.6667
1,2,3,7,8,9-HxCDD	5.50	0.43	0.10000	0.5466	0.5466	0.5466
Total HxCDD	69.00	0.40	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	70.00	0.31	0.01000	0.6981	0.6981	0.6981
1,2,3,4,7,8,9-HpCDF	3.30	0.34	0.01000	0.0326	0.0326	0.0326
Total HpCDF	110.00	0.33	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	98.00	0.37	0.01000	0.9794	0.9794	0.9794
Total HpCDD	180.00	0.37	0.00000	0.0000	0.0000	0.0000
OCDF	59.00	0.82	0.00030	0.0176	0.0176	0.0176
OCDD	640.00	0.76	0.00030	0.1926	0.1926	0.1926
				19 ng/Kg	**19 ng/Kg**	**19 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-26.3		
Lab Sample ID	10257348014-S		
Filename	U140304B_13		
Injected By	SMT		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	18.7	Dilution	NA
Dry Weight Extracted	8.54 g	Collected	02/04/2014 11:45
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 01:38

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	9.1	-----	0.38		2,3,7,8-TCDF-13C	2.00	94	
Total TCDF	230.0	-----	0.38		2,3,7,8-TCDD-13C	2.00	99	
					1,2,3,7,8-PeCDF-13C	2.00	108	
2,3,7,8-TCDD	-----	0.43	0.33	IJ	2,3,4,7,8-PeCDF-13C	2.00	82	Y
Total TCDD	11.0	-----	0.33		1,2,3,7,8-PeCDD-13C	2.00	110	
					1,2,3,4,7,8-HxCDF-13C	2.00	95	
1,2,3,7,8-PeCDF	9.7	-----	0.31		1,2,3,6,7,8-HxCDF-13C	2.00	96	
2,3,4,7,8-PeCDF	22.0	-----	0.29		2,3,4,6,7,8-HxCDF-13C	2.00	104	
Total PeCDF	270.0	-----	0.30		1,2,3,7,8,9-HxCDF-13C	2.00	95	
					1,2,3,4,7,8-HxCDD-13C	2.00	85	
1,2,3,7,8-PeCDD	-----	2.20	0.24	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	79	
Total PeCDD	22.0	-----	0.24		1,2,3,4,6,7,8-HpCDF-13C	2.00	79	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	81	
1,2,3,4,7,8-HxCDF	15.0	-----	0.53		1,2,3,4,6,7,8-HpCDD-13C	2.00	92	
1,2,3,6,7,8-HxCDF	17.0	-----	0.45		OCDD-13C	4.00	74	
2,3,4,6,7,8-HxCDF	21.0	-----	0.33					
1,2,3,7,8,9-HxCDF	3.5	-----	0.46	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	210.0	-----	0.44		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	3.0	-----	0.85	J	2,3,7,8-TCDD-37Cl4	0.20	98	
1,2,3,6,7,8-HxCDD	7.0	-----	0.28					
1,2,3,7,8,9-HxCDD	5.4	-----	0.79	J				
Total HxCDD	70.0	-----	0.64					
1,2,3,4,6,7,8-HpCDF	73.0	-----	0.30		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.4	-----	0.49	J	Equivalence: 20 ng/Kg			
Total HpCDF	120.0	-----	0.40		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	100.0	-----	0.27					
Total HpCDD	190.0	-----	0.27					
OCDF	59.0	-----	0.75					
OCDD	670.0	-----	0.69					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-26.3		
Lab Sample ID	10257348014-S		
Filename	U140304B_13		
Injected By	SMT		
Total Amount Extracted	10.5 g	Matrix	Soil
% Moisture	18.7	Dilution	NA
Dry Weight Extracted	8.54 g	Collected	02/04/2014 11:45
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 01:38

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	9.1	0.38	0.10000	0.9149	0.9149	0.9149
Total TCDF	230.0	0.38	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.33	1.00000	0.4277	0.4277	0.4277
Total TCDD	11.0	0.33	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	9.7	0.31	0.03000	0.2911	0.2911	0.2911
2,3,4,7,8-PeCDF	22.0	0.29	0.30000	6.5593	6.5593	6.5593
Total PeCDF	270.0	0.30	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.24	1.00000	2.2206	2.2206	2.2206
Total PeCDD	22.0	0.24	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	15.0	0.53	0.10000	1.4629	1.4629	1.4629
1,2,3,6,7,8-HxCDF	17.0	0.45	0.10000	1.7089	1.7089	1.7089
2,3,4,6,7,8-HxCDF	21.0	0.33	0.10000	2.0703	2.0703	2.0703
1,2,3,7,8,9-HxCDF	3.5	0.46	0.10000	0.3540	0.3540	0.3540
Total HxCDF	210.0	0.44	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	3.0	0.85	0.10000	0.2999	0.2999	0.2999
1,2,3,6,7,8-HxCDD	7.0	0.28	0.10000	0.7035	0.7035	0.7035
1,2,3,7,8,9-HxCDD	5.4	0.79	0.10000	0.5370	0.5370	0.5370
Total HxCDD	70.0	0.64	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	73.0	0.30	0.01000	0.7261	0.7261	0.7261
1,2,3,4,7,8,9-HpCDF	3.4	0.49	0.01000	0.0337	0.0337	0.0337
Total HpCDF	120.0	0.40	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	100.0	0.27	0.01000	1.0233	1.0233	1.0233
Total HpCDD	190.0	0.27	0.00000	0.0000	0.0000	0.0000
OCDF	59.0	0.75	0.00030	0.0177	0.0177	0.0177
OCDD	670.0	0.69	0.00030	0.1996	0.1996	0.1996
				20 ng/Kg	**20 ng/Kg**	**20 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-27		
Lab Sample ID	10257348015-S		
Filename	U140304B_14		
Injected By	SMT		
Total Amount Extracted	10.0 g	Matrix	Soil
% Moisture	21.7	Dilution	NA
Dry Weight Extracted	7.83 g	Collected	02/04/2014 10:00
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 02:23

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	11.00	-----	0.46		2,3,7,8-TCDF-13C	2.00	95	
Total TCDF	270.00	-----	0.46		2,3,7,8-TCDD-13C	2.00	100	
					1,2,3,7,8-PeCDF-13C	2.00	110	
2,3,7,8-TCDD	0.67	-----	0.39	J	2,3,4,7,8-PeCDF-13C	2.00	86	Y
Total TCDD	14.00	-----	0.39		1,2,3,7,8-PeCDD-13C	2.00	116	
					1,2,3,4,7,8-HxCDF-13C	2.00	93	
1,2,3,7,8-PeCDF	11.00	-----	0.24		1,2,3,6,7,8-HxCDF-13C	2.00	93	
2,3,4,7,8-PeCDF	24.00	-----	0.39		2,3,4,6,7,8-HxCDF-13C	2.00	104	
Total PeCDF	280.00	-----	0.32		1,2,3,7,8,9-HxCDF-13C	2.00	94	
					1,2,3,4,7,8-HxCDD-13C	2.00	86	
1,2,3,7,8-PeCDD	-----	2.4	0.21	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	76	
Total PeCDD	22.00	-----	0.21		1,2,3,4,6,7,8-HpCDF-13C	2.00	80	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	81	
1,2,3,4,7,8-HxCDF	17.00	-----	0.57		1,2,3,4,6,7,8-HpCDD-13C	2.00	91	
1,2,3,6,7,8-HxCDF	20.00	-----	0.61		OCDD-13C	4.00	74	
2,3,4,6,7,8-HxCDF	21.00	-----	0.34					
1,2,3,7,8,9-HxCDF	4.00	-----	0.33	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	220.00	-----	0.46		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	2.80	-----	0.36	J	2,3,7,8-TCDD-37Cl4	0.20	100	
1,2,3,6,7,8-HxCDD	-----	7.5	0.42	I				
1,2,3,7,8,9-HxCDD	5.80	-----	0.31	J				
Total HxCDD	70.00	-----	0.37					
1,2,3,4,6,7,8-HpCDF	80.00	-----	0.22		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	4.10	-----	0.50	J	Equivalence: 22 ng/Kg			
Total HpCDF	120.00	-----	0.36		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	110.00	-----	0.56					
Total HpCDD	200.00	-----	0.56					
OCDF	67.00	-----	0.70					
OCDD	720.00	-----	0.77					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-27		
Lab Sample ID	10257348015-S		
Filename	U140304B_14		
Injected By	SMT		
Total Amount Extracted	10.0 g	Matrix	Soil
% Moisture	21.7	Dilution	NA
Dry Weight Extracted	7.83 g	Collected	02/04/2014 10:00
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 02:23

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	11.00	0.46	0.10000	1.0538	1.0538	1.0538
Total TCDF	270.00	0.46	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	0.67	0.39	1.00000	0.6667	0.6667	0.6667
Total TCDD	14.00	0.39	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	11.00	0.24	0.03000	0.3194	0.3194	0.3194
2,3,4,7,8-PeCDF	24.00	0.39	0.30000	7.1498	7.1498	7.1498
Total PeCDF	280.00	0.32	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.21	1.00000	2.4427	2.4427	2.4427
Total PeCDD	22.00	0.21	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	17.00	0.57	0.10000	1.7217	1.7217	1.7217
1,2,3,6,7,8-HxCDF	20.00	0.61	0.10000	1.9854	1.9854	1.9854
2,3,4,6,7,8-HxCDF	21.00	0.34	0.10000	2.1190	2.1190	2.1190
1,2,3,7,8,9-HxCDF	4.00	0.33	0.10000	0.4026	0.4026	0.4026
Total HxCDF	220.00	0.46	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	2.80	0.36	0.10000	0.2841	0.2841	0.2841
1,2,3,6,7,8-HxCDD	ND	0.42	0.10000	0.7527	0.7527	0.7527
1,2,3,7,8,9-HxCDD	5.80	0.31	0.10000	0.5810	0.5810	0.5810
Total HxCDD	70.00	0.37	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	80.00	0.22	0.01000	0.7958	0.7958	0.7958
1,2,3,4,7,8,9-HpCDF	4.10	0.50	0.01000	0.0406	0.0406	0.0406
Total HpCDF	120.00	0.36	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	110.00	0.56	0.01000	1.1320	1.1320	1.1320
Total HpCDD	200.00	0.56	0.00000	0.0000	0.0000	0.0000
OCDF	67.00	0.70	0.00030	0.0200	0.0200	0.0200
OCDD	720.00	0.77	0.00030	0.2153	0.2153	0.2153
				22 ng/Kg	**22 ng/Kg**	**22 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-28		
Lab Sample ID	10257348016-S		
Filename	U140304B_15		
Injected By	SMT		
Total Amount Extracted	6.40 g	Matrix	Soil
% Moisture	18.9	Dilution	NA
Dry Weight Extracted	5.19 g	Collected	02/04/2014 10:07
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 03:08

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	3.8	-----	0.65		2,3,7,8-TCDF-13C	2.00	92	
Total TCDF	79.0	-----	0.65		2,3,7,8-TCDD-13C	2.00	96	
					1,2,3,7,8-PeCDF-13C	2.00	108	
2,3,7,8-TCDD	ND	-----	0.52		2,3,4,7,8-PeCDF-13C	2.00	84	Y
Total TCDD	3.3	-----	0.52		1,2,3,7,8-PeCDD-13C	2.00	113	
					1,2,3,4,7,8-HxCDF-13C	2.00	92	
1,2,3,7,8-PeCDF	3.3	-----	0.45	J	1,2,3,6,7,8-HxCDF-13C	2.00	101	
2,3,4,7,8-PeCDF	8.0	-----	0.40	J	2,3,4,6,7,8-HxCDF-13C	2.00	103	
Total PeCDF	93.0	-----	0.43		1,2,3,7,8,9-HxCDF-13C	2.00	95	
					1,2,3,4,7,8-HxCDD-13C	2.00	86	
1,2,3,7,8-PeCDD	-----	1.2	0.27	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	78	
Total PeCDD	2.9	-----	0.27	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	86	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	88	
1,2,3,4,7,8-HxCDF	6.2	-----	0.57	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	97	
1,2,3,6,7,8-HxCDF	8.7	-----	0.75	J	OCDD-13C	4.00	91	
2,3,4,6,7,8-HxCDF	10.0	-----	0.74					
1,2,3,7,8,9-HxCDF	1.4	-----	0.69	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	150.0	-----	0.69		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	3.2	-----	0.57	J	2,3,7,8-TCDD-37Cl4	0.20	93	
1,2,3,6,7,8-HxCDD	12.0	-----	0.76					
1,2,3,7,8,9-HxCDD	6.7	-----	0.69	J				
Total HxCDD	74.0	-----	0.67					
1,2,3,4,6,7,8-HpCDF	84.0	-----	0.46		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	3.4	-----	1.00	J	Equivalence: 14 ng/Kg			
Total HpCDF	220.0	-----	0.73		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	300.0	-----	0.59					
Total HpCDD	520.0	-----	0.59					
OCDF	200.0	-----	0.91					
OCDD	3600.0	-----	0.81					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-28		
Lab Sample ID	10257348016-S		
Filename	U140304B_15		
Injected By	SMT		
Total Amount Extracted	6.40 g	Matrix	Soil
% Moisture	18.9	Dilution	NA
Dry Weight Extracted	5.19 g	Collected	02/04/2014 10:07
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 03:08

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	3.8	0.65	0.10000	0.3763	0.3763	0.3763
Total TCDF	79.0	0.65	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.52	1.00000	0.0000	0.2592	0.5184
Total TCDD	3.3	0.52	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	3.3	0.45	0.03000	0.0992	0.0992	0.0992
2,3,4,7,8-PeCDF	8.0	0.40	0.30000	2.4084	2.4084	2.4084
Total PeCDF	93.0	0.43	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.27	1.00000	1.2273	1.2273	1.2273
Total PeCDD	2.9	0.27	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	6.2	0.57	0.10000	0.6152	0.6152	0.6152
1,2,3,6,7,8-HxCDF	8.7	0.75	0.10000	0.8650	0.8650	0.8650
2,3,4,6,7,8-HxCDF	10.0	0.74	0.10000	1.0415	1.0415	1.0415
1,2,3,7,8,9-HxCDF	1.4	0.69	0.10000	0.1411	0.1411	0.1411
Total HxCDF	150.0	0.69	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	3.2	0.57	0.10000	0.3218	0.3218	0.3218
1,2,3,6,7,8-HxCDD	12.0	0.76	0.10000	1.2422	1.2422	1.2422
1,2,3,7,8,9-HxCDD	6.7	0.69	0.10000	0.6679	0.6679	0.6679
Total HxCDD	74.0	0.67	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	84.0	0.46	0.01000	0.8394	0.8394	0.8394
1,2,3,4,7,8,9-HpCDF	3.4	1.00	0.01000	0.0343	0.0343	0.0343
Total HpCDF	220.0	0.73	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	300.0	0.59	0.01000	3.0432	3.0432	3.0432
Total HpCDD	520.0	0.59	0.00000	0.0000	0.0000	0.0000
OCDF	200.0	0.91	0.00030	0.0611	0.0611	0.0611
OCDD	3600.0	0.81	0.00030	1.0855	1.0855	1.0855
				14 ng/Kg	**14 ng/Kg**	**15 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - ESN Pacific

Client's Sample ID	RHS-DU-29		
Lab Sample ID	10257348017-S		
Filename	U140304B_16		
Injected By	SMT		
Total Amount Extracted	10.7 g	Matrix	Soil
% Moisture	16.1	Dilution	NA
Dry Weight Extracted	8.98 g	Collected	02/04/2014 09:45
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 03:52

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	4.50	-----	0.32		2,3,7,8-TCDF-13C	2.00	104	
Total TCDF	100.00	-----	0.32		2,3,7,8-TCDD-13C	2.00	109	
					1,2,3,7,8-PeCDF-13C	2.00	127	
2,3,7,8-TCDD	0.48	-----	0.25	J	2,3,4,7,8-PeCDF-13C	2.00	96	Y
Total TCDD	6.70	-----	0.25		1,2,3,7,8-PeCDD-13C	2.00	134	
					1,2,3,4,7,8-HxCDF-13C	2.00	100	
1,2,3,7,8-PeCDF	5.80	-----	0.21		1,2,3,6,7,8-HxCDF-13C	2.00	107	
2,3,4,7,8-PeCDF	13.00	-----	0.16		2,3,4,6,7,8-HxCDF-13C	2.00	113	
Total PeCDF	140.00	-----	0.18		1,2,3,7,8,9-HxCDF-13C	2.00	104	
					1,2,3,4,7,8-HxCDD-13C	2.00	91	
1,2,3,7,8-PeCDD	2.50	-----	0.12	J	1,2,3,6,7,8-HxCDD-13C	2.00	87	
Total PeCDD	22.00	-----	0.12		1,2,3,4,6,7,8-HpCDF-13C	2.00	95	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	99	
1,2,3,4,7,8-HxCDF	12.00	-----	0.53		1,2,3,4,6,7,8-HpCDD-13C	2.00	108	
1,2,3,6,7,8-HxCDF	14.00	-----	0.23		OCDD-13C	4.00	108	
2,3,4,6,7,8-HxCDF	18.00	-----	0.21					
1,2,3,7,8,9-HxCDF	2.70	-----	0.26	J	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	200.00	-----	0.31		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	4.40	-----	0.28	J	2,3,7,8-TCDD-37Cl4	0.20	108	
1,2,3,6,7,8-HxCDD	17.00	-----	0.30					
1,2,3,7,8,9-HxCDD	8.50	-----	0.21					
Total HxCDD	110.00	-----	0.26					
1,2,3,4,6,7,8-HpCDF	120.00	-----	0.16		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	5.20	-----	0.31	J	Equivalence: 21 ng/Kg			
Total HpCDF	290.00	-----	0.23		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	360.00	-----	0.40					
Total HpCDD	610.00	-----	0.40					
OCDF	240.00	-----	0.31					
OCDD	4200.00	-----	0.34					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID	RHS-DU-29		
Lab Sample ID	10257348017-S		
Filename	U140304B_16		
Injected By	SMT		
Total Amount Extracted	10.7 g	Matrix	Soil
% Moisture	16.1	Dilution	NA
Dry Weight Extracted	8.98 g	Collected	02/04/2014 09:45
ICAL ID	U140224	Received	02/11/2014 09:07
CCal Filename(s)	U140304B_02 & U140304B_20	Extracted	02/27/2014 19:30
Method Blank ID	BLANK-39477	Analyzed	03/05/2014 03:52

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	4.50	0.32	0.10000	0.4526	0.4526	0.4526
Total TCDF	100.00	0.32	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	0.48	0.25	1.00000	0.4751	0.4751	0.4751
Total TCDD	6.70	0.25	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	5.80	0.21	0.03000	0.1752	0.1752	0.1752
2,3,4,7,8-PeCDF	13.00	0.16	0.30000	4.0438	4.0438	4.0438
Total PeCDF	140.00	0.18	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	2.50	0.12	1.00000	2.4535	2.4535	2.4535
Total PeCDD	22.00	0.12	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	12.00	0.53	0.10000	1.1988	1.1988	1.1988
1,2,3,6,7,8-HxCDF	14.00	0.23	0.10000	1.4133	1.4133	1.4133
2,3,4,6,7,8-HxCDF	18.00	0.21	0.10000	1.7704	1.7704	1.7704
1,2,3,7,8,9-HxCDF	2.70	0.26	0.10000	0.2678	0.2678	0.2678
Total HxCDF	200.00	0.31	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	4.40	0.28	0.10000	0.4447	0.4447	0.4447
1,2,3,6,7,8-HxCDD	17.00	0.30	0.10000	1.6783	1.6783	1.6783
1,2,3,7,8,9-HxCDD	8.50	0.21	0.10000	0.8481	0.8481	0.8481
Total HxCDD	110.00	0.26	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	120.00	0.16	0.01000	1.1781	1.1781	1.1781
1,2,3,4,7,8,9-HpCDF	5.20	0.31	0.01000	0.0522	0.0522	0.0522
Total HpCDF	290.00	0.23	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	360.00	0.40	0.01000	3.6495	3.6495	3.6495
Total HpCDD	610.00	0.40	0.00000	0.0000	0.0000	0.0000
OCDF	240.00	0.31	0.00030	0.0724	0.0724	0.0724
OCDD	4200.00	0.34	0.00030	1.2711	1.2711	1.2711
				21 ng/Kg	**21 ng/Kg**	**21 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-39446	Matrix	Solid
Filename	F140226B_09	Dilution	NA
Total Amount Extracted	10.5 g	Extracted	02/24/2014 21:00
ICAL ID	F131125	Analyzed	02/27/2014 02:08
CCal Filename(s)	F140226B_01 & F140226B_17	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.140	0.035	IJ	2,3,7,8-TCDF-13C	2.00	74
Total TCDF	0.430	-----	0.035	J	2,3,7,8-TCDD-13C	2.00	81
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	-----	0.060	0.057	IJ	2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.057		1,2,3,7,8-PeCDD-13C	2.00	88
					1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	-----	0.150	0.062	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	91
2,3,4,7,8-PeCDF	ND	-----	0.037		2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	ND	-----	0.049		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	-----	0.086	0.039	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.039		1,2,3,4,6,7,8-HpCDF-13C	2.00	74
					1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	-----	0.048		1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	0.094	-----	0.035	J	OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	-----	0.028	0.028	IJ			
1,2,3,7,8,9-HxCDF	ND	-----	0.042		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.094	-----	0.038	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.050		2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	-----	0.081	0.052	IJ			
1,2,3,7,8,9-HxCDD	ND	-----	0.048				
Total HxCDD	ND	-----	0.050				
1,2,3,4,6,7,8-HpCDF	-----	0.096	0.056	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.047		Equivalence: 0.19 ng/Kg		
Total HpCDF	ND	-----	0.051		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.068	0.054	IJ			
Total HpCDD	0.100	-----	0.054	J			
OCDF	0.200	-----	0.120	J			
OCDD	-----	0.370	0.150	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID			
Lab Sample ID	BLANK-39446		
Filename	F140226B_09		
Injected By	BAL		
Total Amount Extracted	10.5 g	Matrix	Solid
% Moisture	0.0	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	02/24/2014 14:08
ICAL ID	F131125	Received	02/24/2014 14:08
CCal Filename(s)	F140226B_01 & F140226B_17	Extracted	02/24/2014 21:00
Method Blank ID		Analyzed	02/27/2014 02:08

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	ND	0.035	0.10000	0.0136	0.0136	0.0136
Total TCDF	0.430	0.035	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.057	1.00000	0.0601	0.0601	0.0601
Total TCDD	ND	0.057	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	ND	0.062	0.03000	0.0044	0.0044	0.0044
2,3,4,7,8-PeCDF	ND	0.037	0.30000	0.0000	0.0056	0.0112
Total PeCDF	ND	0.049	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.039	1.00000	0.0857	0.0857	0.0857
Total PeCDD	ND	0.039	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	ND	0.048	0.10000	0.0000	0.0024	0.0048
1,2,3,6,7,8-HxCDF	0.094	0.035	0.10000	0.0094	0.0094	0.0094
2,3,4,6,7,8-HxCDF	ND	0.028	0.10000	0.0028	0.0028	0.0028
1,2,3,7,8,9-HxCDF	ND	0.042	0.10000	0.0000	0.0021	0.0042
Total HxCDF	0.094	0.038	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	ND	0.050	0.10000	0.0000	0.0025	0.0050
1,2,3,6,7,8-HxCDD	ND	0.052	0.10000	0.0081	0.0081	0.0081
1,2,3,7,8,9-HxCDD	ND	0.048	0.10000	0.0000	0.0024	0.0048
Total HxCDD	ND	0.050	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	ND	0.056	0.01000	0.0010	0.0010	0.0010
1,2,3,4,7,8,9-HpCDF	ND	0.047	0.01000	0.0000	0.0002	0.0005
Total HpCDF	ND	0.051	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	ND	0.054	0.01000	0.0007	0.0007	0.0007
Total HpCDD	0.100	0.054	0.00000	0.0000	0.0000	0.0000
OCDF	0.200	0.12	0.00030	0.0001	0.0001	0.0001
OCDD	ND	0.15	0.00030	0.0001	0.0001	0.0001
				0.19 ng/Kg	**0.20 ng/Kg**	**0.22 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-39465	Matrix	Solid
Filename	P140301A_05	Dilution	NA
Total Amount Extracted	10.4 g	Extracted	02/26/2014 21:30
ICAL ID	P130624	Analyzed	03/01/2014 10:03
CCal Filename(s)	P140228B_19 & P140301A_15	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	-----	0.14	0.140	IJ	2,3,7,8-TCDF-13C	2.00	75	
Total TCDF	ND	-----	0.140		2,3,7,8-TCDD-13C	2.00	82	
					1,2,3,7,8-PeCDF-13C	2.00	75	
2,3,7,8-TCDD	ND	-----	0.150		2,3,4,7,8-PeCDF-13C	2.00	70	
Total TCDD	ND	-----	0.150		1,2,3,7,8-PeCDD-13C	2.00	73	
					1,2,3,4,7,8-HxCDF-13C	2.00	83	
1,2,3,7,8-PeCDF	ND	-----	0.160		1,2,3,6,7,8-HxCDF-13C	2.00	87	
2,3,4,7,8-PeCDF	ND	-----	0.110		2,3,4,6,7,8-HxCDF-13C	2.00	83	
Total PeCDF	ND	-----	0.130		1,2,3,7,8,9-HxCDF-13C	2.00	83	
					1,2,3,4,7,8-HxCDD-13C	2.00	79	
1,2,3,7,8-PeCDD	ND	-----	0.160		1,2,3,6,7,8-HxCDD-13C	2.00	72	
Total PeCDD	ND	-----	0.160		1,2,3,4,6,7,8-HpCDF-13C	2.00	77	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	74	
1,2,3,4,7,8-HxCDF	ND	-----	0.110		1,2,3,4,6,7,8-HpCDD-13C	2.00	76	
1,2,3,6,7,8-HxCDF	ND	-----	0.084		OCDD-13C	4.00	81	Y
2,3,4,6,7,8-HxCDF	ND	-----	0.091					
1,2,3,7,8,9-HxCDF	ND	-----	0.110		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	ND	-----	0.099		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	0.130		2,3,7,8-TCDD-37Cl4	0.20	90	
1,2,3,6,7,8-HxCDD	ND	-----	0.130					
1,2,3,7,8,9-HxCDD	ND	-----	0.130					
Total HxCDD	ND	-----	0.130					
1,2,3,4,6,7,8-HpCDF	-----	0.20	0.120	IJ	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	-----	0.170		Equivalence: 0.018 ng/Kg			
Total HpCDF	ND	-----	0.140		(Using 2005 WHO Factors)			
1,2,3,4,6,7,8-HpCDD	0.17	-----	0.140	J				
Total HpCDD	0.44	-----	0.140	J				
OCDF	ND	-----	0.260					
OCDD	0.95	-----	0.330	J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID			
Lab Sample ID	BLANK-39465		
Filename	P140301A_05		
Injected By	BAL		
Total Amount Extracted	10.4 g	Matrix	Solid
% Moisture	0.0	Dilution	NA
Dry Weight Extracted	10.4 g	Collected	02/25/2014 20:04
ICAL ID	P130624	Received	02/25/2014 20:04
CCal Filename(s)	P140228B_19 & P140301A_15	Extracted	02/26/2014 21:30
Method Blank ID		Analyzed	03/01/2014 10:03

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	ND	0.14	0.10000	0.0143	0.0143	0.0143
Total TCDF	ND	0.14	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.15	1.00000	0.0000	0.0752	0.1504
Total TCDD	ND	0.15	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	ND	0.16	0.03000	0.0000	0.0023	0.0047
2,3,4,7,8-PeCDF	ND	0.11	0.30000	0.0000	0.0169	0.0339
Total PeCDF	ND	0.13	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.16	1.00000	0.0000	0.0775	0.1550
Total PeCDD	ND	0.16	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	ND	0.11	0.10000	0.0000	0.0053	0.0107
1,2,3,6,7,8-HxCDF	ND	0.084	0.10000	0.0000	0.0042	0.0084
2,3,4,6,7,8-HxCDF	ND	0.091	0.10000	0.0000	0.0045	0.0091
1,2,3,7,8,9-HxCDF	ND	0.11	0.10000	0.0000	0.0057	0.0114
Total HxCDF	ND	0.099	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	ND	0.13	0.10000	0.0000	0.0067	0.0134
1,2,3,6,7,8-HxCDD	ND	0.13	0.10000	0.0000	0.0064	0.0129
1,2,3,7,8,9-HxCDD	ND	0.13	0.10000	0.0000	0.0065	0.0130
Total HxCDD	ND	0.13	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	ND	0.12	0.01000	0.0020	0.0020	0.0020
1,2,3,4,7,8,9-HpCDF	ND	0.17	0.01000	0.0000	0.0008	0.0017
Total HpCDF	ND	0.14	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	0.17	0.14	0.01000	0.0017	0.0017	0.0017
Total HpCDD	0.44	0.14	0.00000	0.0000	0.0000	0.0000
OCDF	ND	0.26	0.00030	0.0000	0.0000	0.0001
OCDD	0.95	0.33	0.00030	0.0003	0.0003	0.0003
				0.018 ng/Kg	**0.23 ng/Kg**	**0.44 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-39477	Matrix	Solid
Filename	P140304B_01	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	02/27/2014 19:30
ICAL ID	P130624	Analyzed	03/04/2014 17:06
CCal Filename(s)	P140304A_11 & P140304B_15	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.110	0.076	IJ	2,3,7,8-TCDF-13C	2.00	72
Total TCDF	ND	-----	0.076		2,3,7,8-TCDD-13C	2.00	86
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.110		2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	ND	-----	0.110		1,2,3,7,8-PeCDD-13C	2.00	87
					1,2,3,4,7,8-HxCDF-13C	2.00	89
1,2,3,7,8-PeCDF	-----	0.089	0.086	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	88
2,3,4,7,8-PeCDF	0.10	-----	0.069	J	2,3,4,6,7,8-HxCDF-13C	2.00	86
Total PeCDF	0.10	-----	0.077	J	1,2,3,7,8,9-HxCDF-13C	2.00	87
					1,2,3,4,7,8-HxCDD-13C	2.00	87
1,2,3,7,8-PeCDD	ND	-----	0.140		1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	ND	-----	0.140		1,2,3,4,6,7,8-HpCDF-13C	2.00	85
					1,2,3,4,7,8,9-HpCDF-13C	2.00	83
1,2,3,4,7,8-HxCDF	-----	0.120	0.048	IJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	89
1,2,3,6,7,8-HxCDF	0.10	-----	0.041	J	OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	0.17	-----	0.043	J			
1,2,3,7,8,9-HxCDF	0.14	-----	0.078	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.41	-----	0.053	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.14	-----	0.130	J	2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	-----	0.140	0.120	IJ			
1,2,3,7,8,9-HxCDD	-----	0.120	0.094	IJ			
Total HxCDD	0.14	-----	0.110	J			
1,2,3,4,6,7,8-HpCDF	-----	0.150	0.085	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	-----	0.220	0.078	IJ	Equivalence: 0.15 ng/Kg		
Total HpCDF	ND	-----	0.082		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	0.23	-----	0.110	J			
Total HpCDD	0.41	-----	0.110	J			
OCDF	0.70	-----	0.160	J			
OCDD	1.30	-----	0.220	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

2,3,7,8-TCDD Toxic Equivalency (TEQ) Calculations

ESN Pacific

Client's Sample ID			
Lab Sample ID	BLANK-39477		
Filename	P140304B_01		
Injected By	SMT		
Total Amount Extracted	10.1 g	Matrix	Solid
% Moisture	0.0	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	02/26/2014 19:20
ICAL ID	P130624	Received	02/26/2014 19:20
CCal Filename(s)	P140304A_11 & P140304B_15	Extracted	02/27/2014 19:30
Method Blank ID		Analyzed	03/04/2014 17:06

Parameter	Conc ng/Kg	RL ng/Kg	WHO2005	LB	MB	UB
2,3,7,8-TCDF	ND	0.076	0.10000	0.0115	0.0115	0.0115
Total TCDF	ND	0.076	0.00000	0.0000	0.0000	0.0000
2,3,7,8-TCDD	ND	0.11	1.00000	0.0000	0.0525	0.1050
Total TCDD	ND	0.11	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDF	ND	0.086	0.03000	0.0027	0.0027	0.0027
2,3,4,7,8-PeCDF	0.10	0.069	0.30000	0.0308	0.0308	0.0308
Total PeCDF	0.10	0.077	0.00000	0.0000	0.0000	0.0000
1,2,3,7,8-PeCDD	ND	0.14	1.00000	0.0000	0.0711	0.1422
Total PeCDD	ND	0.14	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDF	ND	0.048	0.10000	0.0118	0.0118	0.0118
1,2,3,6,7,8-HxCDF	0.10	0.041	0.10000	0.0104	0.0104	0.0104
2,3,4,6,7,8-HxCDF	0.17	0.043	0.10000	0.0171	0.0171	0.0171
1,2,3,7,8,9-HxCDF	0.14	0.078	0.10000	0.0138	0.0138	0.0138
Total HxCDF	0.41	0.053	0.00000	0.0000	0.0000	0.0000
1,2,3,4,7,8-HxCDD	0.14	0.13	0.10000	0.0142	0.0142	0.0142
1,2,3,6,7,8-HxCDD	ND	0.12	0.10000	0.0143	0.0143	0.0143
1,2,3,7,8,9-HxCDD	ND	0.094	0.10000	0.0121	0.0121	0.0121
Total HxCDD	0.14	0.11	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDF	ND	0.085	0.01000	0.0015	0.0015	0.0015
1,2,3,4,7,8,9-HpCDF	ND	0.078	0.01000	0.0022	0.0022	0.0022
Total HpCDF	ND	0.082	0.00000	0.0000	0.0000	0.0000
1,2,3,4,6,7,8-HpCDD	0.23	0.11	0.01000	0.0023	0.0023	0.0023
Total HpCDD	0.41	0.11	0.00000	0.0000	0.0000	0.0000
OCDF	0.70	0.16	0.00030	0.0002	0.0002	0.0002
OCDD	1.30	0.22	0.00030	0.0004	0.0004	0.0004
				0.15 ng/Kg	**0.27 ng/Kg**	**0.39 ng/Kg**

Final values are valid to only 2 significant figures
TEQs for Totals classes include contributions from non 2,3,7,8 isomers only
LB = Lower Bound, Where "ND", TEQ Conc = 0
MB = Medium Bound, Where "ND", TEQ Conc = (LOD/2) * (TEF Factor)
UB = Upper Bound, Where "ND", TEQ Conc = LOD * (TEF Factor)
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-39447		
Filename	F140226B_15	Matrix	Solid
Total Amount Extracted	10.0 g	Dilution	NA
ICAL ID	F131125	Extracted	02/24/2014 21:00
CCal Filename(s)	F140226B_01 & F140226B_17	Analyzed	02/27/2014 06:48
Method Blank ID	BLANK-39446	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	115	2,3,7,8-TCDF-13C	2.0	75
Total TCDF				2,3,7,8-TCDD-13C	2.0	85
				1,2,3,7,8-PeCDF-13C	2.0	85
2,3,7,8-TCDD	0.20	0.18	89	2,3,4,7,8-PeCDF-13C	2.0	85
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	97
				1,2,3,4,7,8-HxCDF-13C	2.0	81
1,2,3,7,8-PeCDF	1.0	1.2	117	1,2,3,6,7,8-HxCDF-13C	2.0	89
2,3,4,7,8-PeCDF	1.0	1.1	109	2,3,4,6,7,8-HxCDF-13C	2.0	87
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	82
				1,2,3,4,7,8-HxCDD-13C	2.0	77
1,2,3,7,8-PeCDD	1.0	1.0	100	1,2,3,6,7,8-HxCDD-13C	2.0	78
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	78
				1,2,3,4,7,8,9-HpCDF-13C	2.0	75
1,2,3,4,7,8-HxCDF	1.0	1.1	110	1,2,3,4,6,7,8-HpCDD-13C	2.0	83
1,2,3,6,7,8-HxCDF	1.0	1.1	109	OCDD-13C	4.0	69
2,3,4,6,7,8-HxCDF	1.0	1.0	100			
1,2,3,7,8,9-HxCDF	1.0	1.1	107	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	115	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	1.0	1.3	128			
1,2,3,7,8,9-HxCDD	1.0	1.2	119			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	106			
1,2,3,4,7,8,9-HpCDF	1.0	0.94	94			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	102			
Total HpCDD						
OCDF	2.0	2.0	99			
OCDD	2.0	2.2	110			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range
Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-39466		
Filename	P140301A_01	Matrix	Solid
Total Amount Extracted	10.6 g	Dilution	NA
ICAL ID	P130624	Extracted	02/26/2014 21:30
CCal Filename(s)	P140228B_19 & P140301A_15	Analyzed	03/01/2014 07:12
Method Blank ID	BLANK-39465	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	0.20	0.22	112	2,3,7,8-TCDF-13C	2.0	79	
Total TCDF				2,3,7,8-TCDD-13C	2.0	85	
				1,2,3,7,8-PeCDF-13C	2.0	75	
2,3,7,8-TCDD	0.20	0.18	89	2,3,4,7,8-PeCDF-13C	2.0	71	
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	75	
				1,2,3,4,7,8-HxCDF-13C	2.0	88	
1,2,3,7,8-PeCDF	1.0	1.2	117	1,2,3,6,7,8-HxCDF-13C	2.0	90	
2,3,4,7,8-PeCDF	1.0	1.1	111	2,3,4,6,7,8-HxCDF-13C	2.0	86	
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	88	
				1,2,3,4,7,8-HxCDD-13C	2.0	80	
1,2,3,7,8-PeCDD	1.0	0.97	97	1,2,3,6,7,8-HxCDD-13C	2.0	75	
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	82	
				1,2,3,4,7,8,9-HpCDF-13C	2.0	77	
1,2,3,4,7,8-HxCDF	1.0	1.1	111	1,2,3,4,6,7,8-HpCDD-13C	2.0	80	
1,2,3,6,7,8-HxCDF	1.0	1.1	112	OCDD-13C	4.0	100	Y
2,3,4,6,7,8-HxCDF	1.0	1.1	112				
1,2,3,7,8,9-HxCDF	1.0	1.1	106	1,2,3,4-TCDD-13C	2.0	NA	
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA	
1,2,3,4,7,8-HxCDD	1.0	1.2	115	2,3,7,8-TCDD-37Cl4	0.20	85	
1,2,3,6,7,8-HxCDD	1.0	1.2	122				
1,2,3,7,8,9-HxCDD	1.0	1.2	118				
Total HxCDD							
1,2,3,4,6,7,8-HpCDF	1.0	1.1	114				
1,2,3,4,7,8,9-HpCDF	1.0	1.0	103				
Total HpCDF							
1,2,3,4,6,7,8-HpCDD	1.0	1.1	106				
Total HpCDD							
OCDF	2.0	2.2	108				
OCDD	2.0	2.2	110				

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-39478		
Filename	P140304B_14	Matrix	Solid
Total Amount Extracted	10.3 g	Dilution	NA
ICAL ID	P130624	Extracted	02/27/2014 19:30
CCal Filename(s)	P140304A_11 & P140304B_15	Analyzed	03/05/2014 02:21
Method Blank ID	BLANK-39477	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	115	2,3,7,8-TCDF-13C	2.0	81
Total TCDF				2,3,7,8-TCDD-13C	2.0	96
				1,2,3,7,8-PeCDF-13C	2.0	89
2,3,7,8-TCDD	0.20	0.19	93	2,3,4,7,8-PeCDF-13C	2.0	87
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	100
				1,2,3,4,7,8-HxCDF-13C	2.0	94
1,2,3,7,8-PeCDF	1.0	1.2	116	1,2,3,6,7,8-HxCDF-13C	2.0	94
2,3,4,7,8-PeCDF	1.0	1.1	108	2,3,4,6,7,8-HxCDF-13C	2.0	91
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	94
				1,2,3,4,7,8-HxCDD-13C	2.0	96
1,2,3,7,8-PeCDD	1.0	0.96	96	1,2,3,6,7,8-HxCDD-13C	2.0	81
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	90
				1,2,3,4,7,8,9-HpCDF-13C	2.0	87
1,2,3,4,7,8-HxCDF	1.0	1.1	110	1,2,3,4,6,7,8-HpCDD-13C	2.0	91
1,2,3,6,7,8-HxCDF	1.0	1.1	107	OCDD-13C	4.0	70
2,3,4,6,7,8-HxCDF	1.0	1.1	107			
1,2,3,7,8,9-HxCDF	1.0	1.1	105	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	109	2,3,7,8-TCDD-37Cl4	0.20	92
1,2,3,6,7,8-HxCDD	1.0	1.2	120			
1,2,3,7,8,9-HxCDD	1.0	1.1	113			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	109			
1,2,3,4,7,8,9-HpCDF	1.0	0.98	98			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	102			
Total HpCDD						
OCDF	2.0	2.3	115			
OCDD	2.0	2.2	112			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-39448		
Filename	F140226B_16	Matrix	Solid
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	F131125	Extracted	02/24/2014 21:00
CCal Filename(s)	F140226B_01 & F140226B_17	Analyzed	02/27/2014 07:34
Method Blank ID	BLANK-39446	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.24	119	2,3,7,8-TCDF-13C	2.0	64
Total TCDF				2,3,7,8-TCDD-13C	2.0	74
				1,2,3,7,8-PeCDF-13C	2.0	78
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.0	81
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	90
				1,2,3,4,7,8-HxCDF-13C	2.0	78
1,2,3,7,8-PeCDF	1.0	1.2	119	1,2,3,6,7,8-HxCDF-13C	2.0	90
2,3,4,7,8-PeCDF	1.0	1.1	109	2,3,4,6,7,8-HxCDF-13C	2.0	87
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	78
				1,2,3,4,7,8-HxCDD-13C	2.0	73
1,2,3,7,8-PeCDD	1.0	1.0	103	1,2,3,6,7,8-HxCDD-13C	2.0	81
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	78
				1,2,3,4,7,8,9-HpCDF-13C	2.0	74
1,2,3,4,7,8-HxCDF	1.0	1.2	115	1,2,3,4,6,7,8-HpCDD-13C	2.0	84
1,2,3,6,7,8-HxCDF	1.0	1.1	107	OCDD-13C	4.0	73
2,3,4,6,7,8-HxCDF	1.0	1.0	102			
1,2,3,7,8,9-HxCDF	1.0	1.1	107	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.2	124	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	1.0	1.2	123			
1,2,3,7,8,9-HxCDD	1.0	1.2	121			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	108			
1,2,3,4,7,8,9-HpCDF	1.0	0.94	94			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	102			
Total HpCDD						
OCDF	2.0	2.0	101			
OCDD	2.0	2.2	110			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client	ESN Pacific		
Spike 1 ID	LCS-39447	Spike 2 ID	LCSD-39448
Spike 1 Filename	F140226B_15	Spike 2 Filename	F140226B_16

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	115	119	3.4
2,3,7,8-TCDD	89	91	2.2
1,2,3,7,8-PeCDF	117	119	1.7
2,3,4,7,8-PeCDF	109	109	0.0
1,2,3,7,8-PeCDD	100	103	3.0
1,2,3,4,7,8-HxCDF	110	115	4.4
1,2,3,6,7,8-HxCDF	109	107	1.9
2,3,4,6,7,8-HxCDF	100	102	2.0
1,2,3,7,8,9-HxCDF	107	107	0.0
1,2,3,4,7,8-HxCDD	115	124	7.5
1,2,3,6,7,8-HxCDD	128	123	4.0
1,2,3,7,8,9-HxCDD	119	121	1.7
1,2,3,4,6,7,8-HpCDF	106	108	1.9
1,2,3,4,7,8,9-HpCDF	94	94	0.0
1,2,3,4,6,7,8-HpCDD	102	102	0.0
OCDF	99	101	2.0
OCDD	110	110	0.0

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - ESN Pacific

Client's Sample ID	RHS-DU-20-MS		
Lab Sample ID	10257348006-S-MS		
Filename	U140304B_03	Matrix	Soil
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	U140224	Extracted	02/27/2014 19:30
CCal Filename(s)	U140304B_02 & U140304B_20	Analyzed	03/04/2014 18:10
Method Blank ID	BLANK-39477	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.34	169	2,3,7,8-TCDF-13C	2.00	95
				2,3,7,8-TCDD-13C	2.00	101
				1,2,3,7,8-PeCDF-13C	2.00	104
2,3,7,8-TCDD	0.20	0.19	95	2,3,4,7,8-PeCDF-13C	2.00	82 Y
				1,2,3,7,8-PeCDD-13C	2.00	112
				1,2,3,4,7,8-HxCDF-13C	2.00	89
1,2,3,7,8-PeCDF	1.00	1.29	129	1,2,3,6,7,8-HxCDF-13C	2.00	95
2,3,4,7,8-PeCDF	1.00	1.38	138	2,3,4,6,7,8-HxCDF-13C	2.00	101
				1,2,3,7,8,9-HxCDF-13C	2.00	92
				1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	1.00	1.08	108	1,2,3,6,7,8-HxCDD-13C	2.00	81
				1,2,3,4,6,7,8-HpCDF-13C	2.00	76
				1,2,3,4,7,8,9-HpCDF-13C	2.00	77
1,2,3,4,7,8-HxCDF	1.00	1.32	132	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	1.00	1.32	132	OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	1.00	1.28	128			
1,2,3,7,8,9-HxCDF	1.00	1.20	120	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.26	126	2,3,7,8-TCDD-37Cl4	0.20	102
1,2,3,6,7,8-HxCDD	1.00	1.28	128			
1,2,3,7,8,9-HxCDD	1.00	1.32	132			
1,2,3,4,6,7,8-HpCDF	1.00	1.80	180			
1,2,3,4,7,8,9-HpCDF	1.00	1.07	107			
1,2,3,4,6,7,8-HpCDD	1.00	1.93	193			
OCDF	2.00	2.87	144			
OCDD	2.00	8.40	420			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - ESN Pacific

Client's Sample ID	RHS-DU-20-MSD		
Lab Sample ID	10257348006-S-MSD		
Filename	U140304B_04	Matrix	Soil
Total Amount Extracted	10.0 g	Dilution	NA
ICAL ID	U140224	Extracted	02/27/2014 19:30
CCal Filename(s)	U140304B_02 & U140304B_20	Analyzed	03/04/2014 18:55
Method Blank ID	BLANK-39477	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.36	179	2,3,7,8-TCDF-13C	2.00	100
				2,3,7,8-TCDD-13C	2.00	106
				1,2,3,7,8-PeCDF-13C	2.00	114
2,3,7,8-TCDD	0.20	0.21	103	2,3,4,7,8-PeCDF-13C	2.00	88 Y
				1,2,3,7,8-PeCDD-13C	2.00	121
				1,2,3,4,7,8-HxCDF-13C	2.00	98
1,2,3,7,8-PeCDF	1.00	1.36	136	1,2,3,6,7,8-HxCDF-13C	2.00	98
2,3,4,7,8-PeCDF	1.00	1.47	147	2,3,4,6,7,8-HxCDF-13C	2.00	107
				1,2,3,7,8,9-HxCDF-13C	2.00	96
				1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	1.00	1.07	107	1,2,3,6,7,8-HxCDD-13C	2.00	84
				1,2,3,4,6,7,8-HpCDF-13C	2.00	82
				1,2,3,4,7,8,9-HpCDF-13C	2.00	84
1,2,3,4,7,8-HxCDF	1.00	1.35	135	1,2,3,4,6,7,8-HpCDD-13C	2.00	93
1,2,3,6,7,8-HxCDF	1.00	1.36	136	OCDD-13C	4.00	78
2,3,4,6,7,8-HxCDF	1.00	1.33	133			
1,2,3,7,8,9-HxCDF	1.00	1.20	120	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.24	124	2,3,7,8-TCDD-37Cl4	0.20	106
1,2,3,6,7,8-HxCDD	1.00	1.35	135			
1,2,3,7,8,9-HxCDD	1.00	1.32	132			
1,2,3,4,6,7,8-HpCDF	1.00	1.92	192			
1,2,3,4,7,8,9-HpCDF	1.00	1.05	105			
1,2,3,4,6,7,8-HpCDD	1.00	2.01	201			
OCDF	2.00	3.01	150			
OCDD	2.00	9.02	451			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - ESN Pacific

Client Sample ID	RHS-DU-20			Dry Weights	
Lab Sample ID	10257348006-S	Sample Filename	U140304B_07	Sample Amount	8.49 g
MS ID	10257348006-S-MS	MS Filename	U140304B_03	MS Amount	8.9 g
MSD ID	10257348006-S-MSD	MSD Filename	U140304B_04	MSD Amount	8.5 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	Background Subtracted MSD % Rec.	Background Subtracted RPD
2,3,7,8-TCDF	9.118	0.20	0.34	0.36	5.9	129	141	9.1
2,3,7,8-TCDD	0.402	0.20	0.19	0.21	8.0	94	102	8.2
1,2,3,7,8-PeCDF	9.593	1.00	1.29	1.36	5.0	120	127	5.6
2,3,4,7,8-PeCDF	21.246	1.00	1.38	1.47	6.3	119	129	8.0
1,2,3,7,8-PeCDD	0.000	1.00	1.08	1.07	1.3	106	105	1.2
1,2,3,4,7,8-HxCDF	16.158	1.00	1.32	1.35	2.5	117	121	3.4
1,2,3,6,7,8-HxCDF	17.658	1.00	1.32	1.36	3.1	116	121	4.1
2,3,4,6,7,8-HxCDF	19.601	1.00	1.28	1.33	4.2	110	117	5.5
1,2,3,7,8,9-HxCDF	3.292	1.00	1.20	1.20	0.2	117	117	0.1
1,2,3,4,7,8-HxCDD	2.476	1.00	1.26	1.24	2.1	124	122	2.1
1,2,3,6,7,8-HxCDD	7.186	1.00	1.28	1.35	5.2	122	129	5.7
1,2,3,7,8,9-HxCDD	4.806	1.00	1.32	1.32	0.6	128	127	0.4
1,2,3,4,6,7,8-HpCDF	72.436	1.00	1.80	1.92	6.2	116	130	11.9
1,2,3,4,7,8,9-HpCDF	3.936	1.00	1.07	1.05	2.2	104	101	2.1
1,2,3,4,6,7,8-HpCDD	104.476	1.00	1.93	2.01	4.1	100	113	11.8
OCDF	62.070	2.00	2.87	3.01	4.6	116	124	6.7
OCDD	667.257	2.00	8.40	9.02	7.2	122	168	31.3

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

APPENDIX D

ASBESTOS DISPOSAL MANIFEST

Unit 1701SC

ASBESTOS WASTE SHIPMENT RECORD

87834

GENERATOR

1. Work Site Name and Mailing Address (Generator)	Owner's Name	Owners Telephone #
14-2215 Radford High School- ACM Disposal 4361 Salt Lake Blvd, Honolulu HI 96818	State of Hawaii Dept. of Education	(808) 543-6132 Agent
2. Remover's Name and Address Unitek Insulation, LLC. P.O. Box 29177 Honolulu, HI 96820		**Remover's Telephone #** (808) 831-3076
3. Waste Disposal site (WDS) Name and Physical Site Location PVT Land Company 87-2020 Farrington Hwy. Waianae, HI 96792-3749		**WDS Telephone No.** (808) 668-4561
4. Name and Address of EPA Office, local, state or regional EPA NESHAP Region 9 75 Hawthorne St., A-3-3 or San Francisco, CA 94105	Noise, Radiation & Indoor Air Branch 591 Ala Moana Blvd. Honolulu, HI 96813	

5. HM	ID Number	Description of Material	Hazard Class	Packing Group#	6. Packages No.	6. Packages Type	7. Total Quantity m3	7. Total Quantity (yd3)
Asbestos	NA2212	ACM Debris	9	III	5	Bags		.1

8. Special Handling Instructions and 24 Hour Emergency Telephone Number (provided by Generator)

24 Hour Emergency Contact Person - Darwyn Scott ph: 808-831-3076
ERG 171

GENERATORS' CERTIFICATION: I hereby declare that the ocntents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governement regulations.
Note: Generator must retain a copy of this form.

Printed/Typed Name and Title	Signature (on behalf of)	Month/Day/Year
Sheena Sylva, Waste Manager	Sheena M. Sylva	02/19/2014

TRANSPORTER

10. TRANSPORTER 1(ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS) Note Transporter must retain a copy of this form.

Printed/Typed name and Title	Signature	Month/Day/Year
Unitek Insulation, LLC MIKE ALI DRIVER	Mike Ali	2-20-14
Address P.O. Box 29177 Honolulu, Hawaii	**Telephone No.** (808)831-3076	

11. TRANSPORTER 2(ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS) Note Transporter must retain a copy of this form.

Printed/Typed name and Title	Signature	Month/Day/Year
Unitek Insulation, LLC		
Address P.O. Box 29177 Honolulu, Hawaii	**Telephone No.** (808)831-3076	

DISPOSAL

12. Problems with Containment or Packaging	Rejected yes or no

13. WASTE DISPOSAL SITE OWNER OR OPERATOR
Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.

Printed/Typed name and Title	Signature	Month/Day/Year
LAHELA ROMENA WEIGHMASTER	L. Romena	FEB 20 2014

BUREAU VERITAS

For the benefit of business and people

www.us.bureauveritas.com